SPAWAR

Enabling Knowledge Superiority for the Warfighter

Annual Report 2001

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Welcome to the Space & Naval Warfare Systems Command's 2001 Annual Report. Our Team is very excited about having the chance to "fill you in" on all that has been happening recently in this dynamic organization.

This is our first Annual Report in several years. Since our last report the command has relocated from Washington, DC to San Diego, CA and grown, both in size and in budget. We've made several changes in the way we conduct business—with many more on the horizon. These are not changes for change sake, but significant improvements in the way we develop, install, maintain and support our products and train the people who use them. We're also pleased to report that the Fleet, our principal customer, has recognized that change is the byword at SPAWAR. They seem pleased with the changes and with the increased level of support now being provided.

Here are a few examples: We've revised our shipboard installation schedules to be in consonance with CNO ship availabilities; the result is a less intrusive, more cost effective installation of capability. We ensure that deploying Battlegroups and Amphibious Ready Groups have first priority to receive new C4ISR capability. We're talking, and listening, to our fleet customer as never before. We're using our Naval Reserve units to actively support deploying battlegroups, providing much needed training and orientation on SPAWAR installed systems. We've begun an active, command-wide strategic planning effort to ensure all parts of the organization understand our mission, responsibilities and priorities.

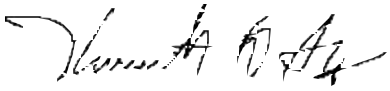
Since the tragic events of 11 September, we've redoubled our efforts, with increased focus on Casualty Reports and Casualty Corrections, timely installation of systems, Command Center reconstruction, Homeland Security issues and other national priorities. We will continue to press in these and other vital areas for the foreseeable future.

Does this mean we've solved all the problems associated with providing the Fleet integrated information technology capability in the twenty-first century? Regrettably, the answer is: "Not just yet." We are still very much aware that more work remains to be done. But "status quo" is gone and new improvements are happening every day. The trend lines are moving in the right direction and more and more customer feedback is positive.

As noted above, this Annual Report is our first in several years. We have worked hard to align ourselves and our priorities with the CNO's priorities and you will see this throughout the document. We feel the areas in which we make the greatest contributions are in the "current and future readiness" priorities, but you will also note some very favorable trends in quality of service, cost reduction, speed to capability and other process improvements.

When you have had the opportunity to read this report, please don't hesitate to let us know your thoughts. Listening is also one of the more important things we do.

One thing you can count on, however, is that our bottom line hasn't changed: We still strive to provide the Fleet with the best C4ISR capability available today. We do it in a timely manner and at the best possible cost. Anything less is unacceptable—to the Fleet and to us.



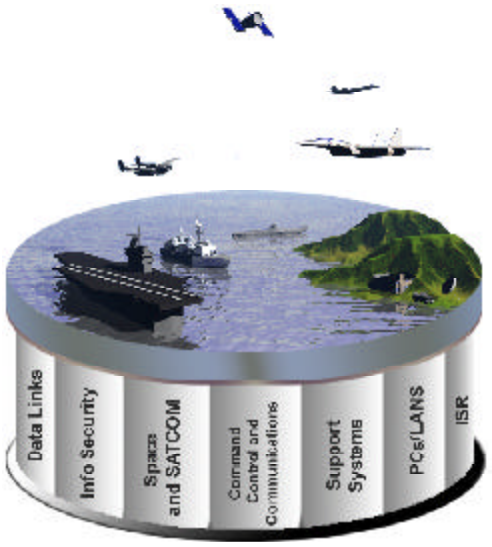
Ken Slaght
Rear Admiral, U.S. Navy
Commander, Space and Naval Warfare
Systems Command

Providing Knowledge Superiority to the Warfighter

Modern warfare is conducted at longer ranges and with greater precision than ever before. Overall mission effectiveness, therefore increasingly depends on systems and services external to the weapons system. At the heart of the U.S. warfighting doctrine are the systems of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR). The purpose of C4ISR, and the mission of the Space and Naval Warfare Systems Command (SPAWAR), is to provide the battle force commander with *knowledge superiority*—the means to see the battlefield, understand its related ongoing activities, formulate effective courses of action, and transmit orders for action.

SPAWAR is the Navy's agent responsible for developing, acquiring and fielding C4ISR systems. Serving Naval Sea Systems Command (NAVSEA) and Naval Air Systems Command (NAVAIR), SPAWAR provides a complete end-to-end capability, from shipboard systems and satellite communications (SATCOM) links to the shore-based infrastructure that supports the Fleet. SPAWAR also provides robust space capabilities to the Fleet and to the Nation, providing SATCOM capabilities and partnering with the National Reconnaissance Office.

SPAWAR is funded by over $4.7B in fiscal resources from Congressional appropriations and various agencies. By aligning ourselves with our customers, SPAWAR is able to provide increased capability at an affordable price. Challenges remain in the financial arena, however, including the clear identification and reduction of our overhead/ indirect costs. Over the last year, we have taken a closer look at the cost of our products and at how we can maximize the capability we provide to the Fleet. Through efforts such as streamlining our installation process, establishing a Business Resource Management Cell, and automating and standardizing our financial systems, we will strive to reduce our total operating costs while continuing to provide ever increasing, vital capability to the Fleet.



Knowledge Superiority

"More than moving information, the real key to Knowledge Superiority is providing the right tools to warfighters—tools that will allow the warfighter to ***translate*** *the information,* ***analyze*** *it, then* ***synthesize*** *that information into decisive,* ***actionable knowledge****, and all in near real-time fashion."*

– RADM Ken Slaght, Commander, Space and Naval Warfare Systems Command

Capability in Action

Conducting any warfighting operation requires *collecting* the right intelligence, surveillance and reconnaissance (ISR) data, then securely *transporting* and *distributing* that data in near real-time to the warfighter for *analysis* and *synthesis* to execute specific missions. As **highlighted** in the following strike scenario, the capabilities and systems of SPAWAR are a critical part of this process—their purpose is to integrate the elements of knowledge superiority to provide the most effective warfighting capability available today.

Onboard *USS John C. Stennis (CVN-74)*, Arabian Gulf, 2003

Current Situation Report: *Rebel forces have overrun the government positions of Redland and appear to be moving to a position less than five miles from the border with Blueland. Following the successful capture of government SCUD missile sites, rebel forces commenced two separate missile strikes across the border, striking both the Comfortzone refugee camp as well as the capital city of Bakar. The 150-man security detachment from the First Marine Division is providing temporary protection for more than 10,000 refugees and over 50 non-government organization personnel.*

Mission for *Stennis* Carrier Battlegroup (CVBG): Conduct precision strike missions against rebel positions in Redland.

Phase I: Using ISR assets, obtain intelligence to assess the full composition and movements of the rebel force in Redland, then share that information with operational forces afloat and ashore.

Mission Planning: As hostilities ashore become more pronounced, the *Stennis* CVBG Commander reviews his overall readiness posture using SPAWAR's **Global Combat Support System (GCSS), Navy Tactical Command Support System** (**NTCSS)**, and the **Joint Status of Readiness and Training System (JSORTS)**, to verify organic logistical and weapons status.

ISR Collection: Information on Redland land and sea forces is collected from a variety of National and Navy assets. Some of the SPAWAR systems used for collecting intelligence information are the **Naval Space Surveillance System (NSSS), or "Space Fence,"** the **Integrated Undersea Surveillance System (IUSS)**, and tactical cryptologic systems organic to the battlegroup, such as **Ship's Signals Exploitation Equipment (SSEE)** and **Combat Direction Finding (CDF).**

Information Transfer: Sensor and intelligence information is encrypted, switched, routed, and transmitted through antennas and satellites to the strike planners from the battlegroup and to Marine Corps security forces and Special Operations Forces on the ground. Using SPAWAR's **Ultra High Frequency Follow On (UFO) satellite constellation** and several satellite communications media, including **Commercial Wideband Satellite Communications Program (CWSP)**, **Super High Frequency** (**SHF)** and **Extremely High Frequency (EHF)** paths, and the **Global Broadcast Service (GBS)**, the right information, both for targeting and for potentially executing a noncombatant evacuation operation is rapidly available to the battlegroup's mission planners.

Information Distribution: Using **Tactical Data Link Systems**, **Battle Force Email**, **video teleconferencing**, and other collaborative tools, mission planners from *Stennis* Carrier Battle Group, *Bon Homme Richard Amphibious Readiness Group*, and the *13th Marine Expeditionary Unit* (MEU) can maintain a **Common Operational Picture (COP)** to seamlessly coordinate their respective missions.

Information Synthesis and Display: As ISR information is consolidated and integrated, battlegroup commanders and mission planners review Redland's order of battle information using SPAWAR's **Modernized Integrated Database (MIDB)**. Command and control information from Air Force Joint Surveillance Target Attach Radar System (JSTARS) aircraft is received through the **Naval JSTARS Interface** and Unmanned Aerial Vehicles (UAV) via close-in submarine support is integrated and displayed via the **Global Command and Control System-Maritime (GCCS-M)**.

Phase 2: Conduct joint air and missile strikes on Redland's SCUD sites and rebel positions.

Engagement Planning: Weather forecasts and cloud cover imagery provided by regional Meteorological/Oceanographic (METOC) centers are overlaid on COP to determine sensor coverage and weather window for the strike mission.

With an interface from the **Theater Battle Management Core Systems (TBMCS)**, the battlegroup receives the joint Air Tasking Order —which is also displayed on **GCCS-M**—identifying specific targets inside Redland, the weapons to employ, and the means for deconflicting with other joint and coalition members. Concurrently, the battlegroup receives the latest Mission Data Updates via the **GBS** for specific Redland targets, which are then loaded into the Tomahawk Weapon System for employment of the Tomahawk Land Attack Missile. The **Joint Tactical Information Distribution System (JTIDS)** and **Global Positioning System (GPS)** files from **GCCS-M** are loaded into an F/A-18 squadron's Tactical Automated Mission Planning System (TAMPS), thereby maximizing the use of its onboard weapons systems. Finally, using several **Information Operations** tools, allied forces can isolate and confuse Redland's forces.

Phase 3: Conduct Battle Damage Assessment.

Following a successful series of air strikes on rebel positions in Redland, organic signals intelligence equipment installed on its afloat platforms. Systems such as the **Battle Group Passive Horizon Extension System** and the **Common Data Link - Navy** collect and distribute battle damage assessments of Redland targets to mission planners afloat for successive strike options and priorities.

Command and Control Systems

At the heart of the previous maritime strike scenario—and indeed at the heart of executing any operational tasking—is the ability of maritime commanders to possess *decision superiority*. A vital component of decision superiority is command and control systems that give operational commanders a common view of the entire battlespace, fusing together ISR information to provide the commander with a common operational picture.

Command and Control Afloat

SPAWAR continues to drive the future of maritime command and control, particularly through the fielding and upgrading of the GCCS-M, the maritime component of the command and control system used by Theater Commanders-in-Chief (CINCs) and National Command Authorities. The GCCS-M is the basis of command and control for maritime forces both afloat and ashore.

SPAWAR improved maritime command and control capabilities through the successful operational evaluation and Fleet release of GCCS-M version 3.1.2.1. This version provides an initial capability that allows participation by naval units in the Joint Common Operational Picture (COP).

GCCS-M version 3.1.2.1 improves "speed of command", allowing commanders to measure data latency in seconds instead of minutes. Using COP Synch Tools (CST), version 3.1.2.1 distributes command and control data through a Wide Area Network (WAN), automating the process of transferring and synchronizing data across the battlespace. Automation in turn minimizes the need for operator intervention, allowing near real-time exchange of track data between nodes. Each node can then receive both raw and processed track information, then distribute the results of track correlation and fusion through the CST network.

CST has also become the building block for further development of the Time Critical Targeting/Time Critical Strike prototypes within SPAWAR, with GCCS-M 3.1.2.1 enhancing current command and control capability and serving as the cornerstone for future development.

Decision Superiority

"*Better decisions arrived at and implemented faster than an opponent can react or, in a noncombat situation, at a tempo that allows the force to shape the situation or react to changes to accomplish its mission*."

– Joint Vision 2020

Command and Control Ashore

In support of SPAWAR's ashore command and control systems, we continue to refine and aggressively organize our Command Center product line. The effort is focused on horizontal integration, interoperability, configuration management, and quality installations. In FY 01, the SPAWAR Team developed and refined a scalable, 30-month C4ISR Initial Operating Capability process that provides early identification and integration of design requirements, embedded horizontal integration in design, and tailored transition planning. Current projects include Command Centers for U.S. Commander-in-Chief, Pacific and the Navy Command Center for U.S. Central Command.

C4ISR Installations During FY01:

Afloat – Over 450 systems including:

- Battle Force E-mail (BF E-mail)
- International Maritime Satellite (INMARSAT)
- Naval Tactical Command Support System (NTCSS)
- Theater Battle Management Core System (TBMCS)
- Submarine High Data Rate (SubHDR)
- TV-Direct to Sailor (TV-DTS)
- Global Command and Control System-Maritime (GCCS-M)
- Tactical Information Dissemination System (TIDS)
- Integrated Shipboard Network System (ISNS)
- Automated Digital Network System (ADNS)

Ashore – Over 350 systems including:

- Defense Messaging System (DMS)
- Tactical Data Information Link (TADIL)
- Global Broadcast System(GBS)
- Global Command and Control System-Maritime (GCCS-M)
- Naval Tactical Command Support System (NTCSS)
- Naval Integrated Tactical Environmental System (NITES)

Tactical Data Links and Joint/Coalition Interoperability

As with our command and control systems, SPAWAR continues to improve tactical interoperability and seamless data sharing among ships, battlegroups, and joint and coalition forces, resulting in increased situational awareness and a greater degree of knowledge superiority.

Tactical Data Links

In FY 01, SPAWAR continued to aggressively coordinate with other system commands (SYSCOMs) and joint agencies to increase tactical interoperability—the seamless exchange of information among theater assets to provide a common operational picture. Our next generation data link is the Multifunctional Information Distribution System (MIDS). This follow-on to the Link-16 system (also called Joint Tactical Information Distribution System or JTIDS) delivered the first production units to the Navy for verification and testing in late 2001. MIDS equipment will be part of more than 17 international programs, including installations on ships, missile batteries, and fighter aircraft (including the F/A-18 and F-16 multi-role fighters).

Two noteworthy accomplishments in FY 01 were improvements in Multi Tactical Data Links Capability (MTC) and enhancements in existing Link-11 surveillance network architectures. MTC ties the GCCS-M and its information systems into the real-time surveillance networks Link-11 and Link-16. Through invaluable enhancements that only real-time sensor information can bring to the operational commanders' situational awareness, this capability has revolutionized the commander's ability to view the battlespace from a planning and intelligence perspective. All of our command ships have been outfitted with the MTC system, and two carriers are undergoing installation work.

SPAWAR has enhanced its legacy Link-11 architectures, by converting and field testing a new radio modulation scheme to enhance connectivity (a longstanding deficiency of the link due to radio propagation effects). We also fielded multi-channel, multi-frequency equipment to add flexibility and redundancy to the radio channels and improved operator interface software which allows a more informed assessment of the network's performance. These enhancements have resulted in substantial improvements to the Fleet's tactical flexibility and effectiveness by reducing network losses and outages.

Theater Battle Management Core System (TBMCS)

TBMCS is an Air Force software program used by all services to plan and disseminate joint Air Tasking Orders. SPAWAR began fielding TBMCS in early FY 01 and the system is used daily in support of Operation Enduring Freedom. SPAWAR also continues to work closely with the Air Force's Electronic Systems Command to fully integrate TBMCS into the GCCS-M. This integration effort has significantly enhanced joint interoperability, allowing the dissemination of critical targeting information in a more timely manner and eliminating several redundant servers. In FY 01, SPAWAR provided new hardware upgrades for TBMCS installations on 12 ships—carriers, large deck amphibious ships, and command ships. So far, 17 ships have received TBMCS version 1.0.1 software.

Joint Surveillance Target Attack Radar System (JSTARS)

JSTARS is a joint Army-Air Force program designed to provide near real time, wide area surveillance and targeting information on moving and stationary ground targets, slow moving rotary and fixed-winged aircraft, rotating antennas, and theater missile defense targets of interest. SPAWAR has worked closely with the Army and Air Force to produce the Naval JSTARS Interface (NJI). NJI provides the ability to display, replay, and track Ground Moving Target Indicator (GMTI) data in the Common Operating Picture. GMTI is a necessary component of tactical command support and can be used for situational awareness, sensor cueing and rapid target update throughout the strike process. Over the last year, Fleet Battle Experiments have successfully demonstrated NJI capabilities.

Space and Satellite Capability

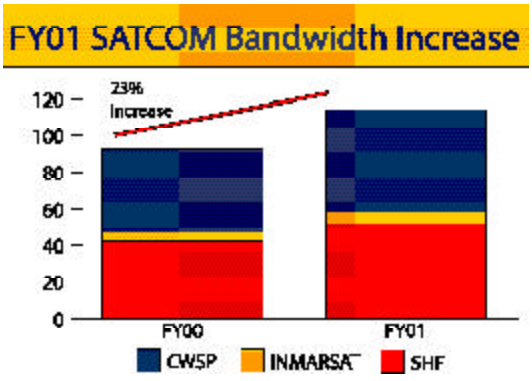
In FY 01, SPAWAR provided the Fleet with a significant increase in voice and data communications capabilities, substantially improving overall performance. These enhancements were accomplished through steady increases and upgrades to our constellation system as well as to the Fleet's satellite communications infrastructure. SPAWAR's efforts in this area have resulted in greater bandwidth (increased data flow to the user), translating into faster and increased *decision superiority* for the warfighter.

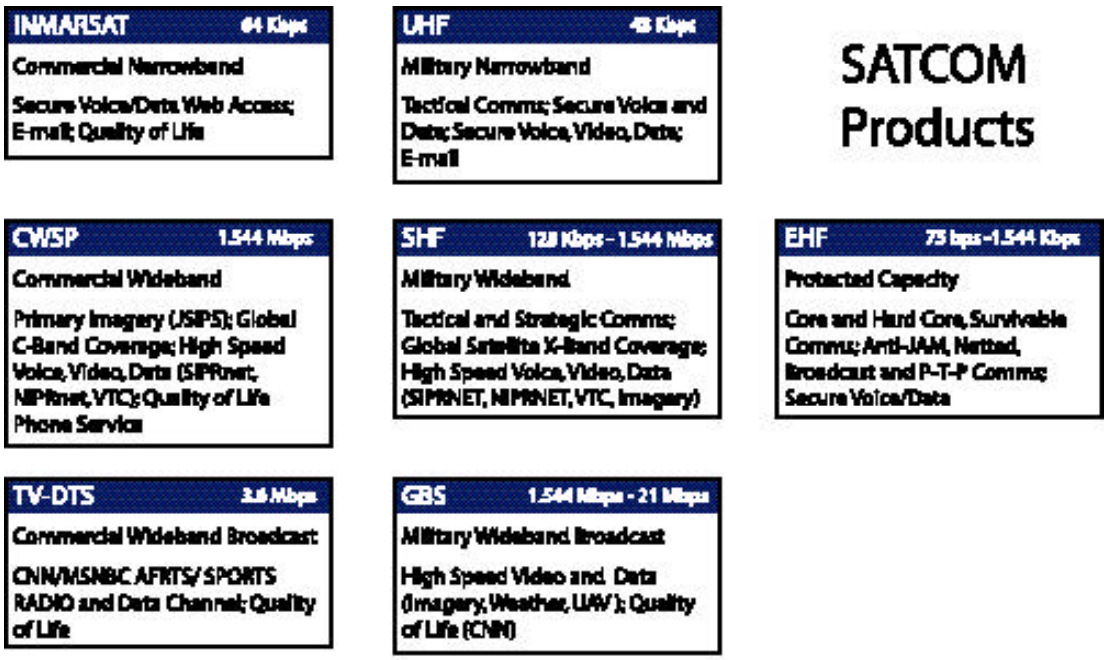
Satellite Launches

In February 2000, SPAWAR brought the UFO satellite constellation to Full Operational Capability, completing the narrowband communications satellite system that is used by all the military services and several U.S. government agencies. An eleventh UFO satellite has a planned launch date of December 2003. This will maintain the availability of the UFO constellation until the next generation narrowband SATCOM system, the Mobile User Objective System (MUOS), is developed and placed in orbit in the 2007 timeframe. MUOS will provide enhanced narrowband SATCOM capacity and improved capabilities, including communications for mobile forces in stressed environments such as dense foliage and urban areas.

Bandwidth Increases

Terminal bandwidth provided by SPAWAR in FY 01 increased from 93.5 Mbps to 115.4 Mbps, a 23 percent increase in the bandwidth available to the Fleet. In addition, an increase of 174 terminals afloat resulted in a 27 percent increase in the number of afloat terminals. Overall bandwidth increases occurred primarily in the SHF, International Maritime Satellite (INMARSAT) program, and Commercial Wideband Satellite Program (CWSP). The number of INMARSAT channels leased for the Fleet, for example, increased from 75 to 100, which increased the bandwidth available to unit-level ships from 5.2 to 6.4 Mbps.





The bandwidth increase for the submarine force was the most pronounced this year with the Fleet introduction of the Submarine High Data Rate (SubHDR) system which enables the submarine force to improve their participation in Network Centric Warfare (NCW). SubHDR provides a quantum leap in communication capability for the submarine force:

- 2.4Kbps EHF LDR
- 64Kbps/128Kbps SHF/DSCS transmit/ receive capability
- 23Mbps GBS and 256Kbps EHF MDR capability using satellite spot beams.

SubHDR coupled with the ADNS, GCCS-M and TIDS systems, is the backbone of the wideband end-to-end capability.

The increase in bandwidth and satellite communication capabilities also carries a Quality of Life dimension through the Television Direct to Sailor (TV-DTS) initiative. An additional 20 ships received TV-DTS terminals in FY 01, increasing the number of ships receiving the TV-DTS broadcast from 112 to 132. TV-DTS itself increased its broadcast television channels from two to three. Sailors and Marines afloat now receive fulltime news, sports, and entertainment channels.

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Intelligence, Surveillance, Reconnaissance and Information Operations (ISR/IO)

In providing knowledge superiority for the warfighter, SPAWAR's ISR/IO systems give the Fleet essential capabilities for collecting, processing, and disseminating an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same. SPAWAR supports this information mission primarily through its undersea warfare, signals exploitation and information warfare systems.

Undersea Warfare

SPAWAR continues to provide significant support in Undersea Warfare with its mobile, fixed, and rapid-deployable surveillance systems that make up the IUSS. The surveillance and cueing inherent to IUSS is a critical enabler in tactical anti-submarine warfare because of its ability to cover large areas while networking multiple sensor systems to produce usable contact information. IUSS accounts for 10 percent of critical objectives in the Navy's Strategic Planning Guidance.

Cumulative towed array operational capability was over 90% in FY 01. An extensive re-engineering program for this series has been initiated to increase overall array reliability.

To identify the capability upgrade priorities that will promote the rapid dissemination of data collected from IUSS sensors to warfighters, a comprehensive end-to-end C4I assessment was completed for all IUSS platforms. By leveraging the Horizontal Integration and Expeditionary Command, Control, Communications, Computers and Combat Systems Grid (EC5G) initiatives, procuring SPAWAR products, utilizing the Navy infrastructure of Teleport and the Navy/Marine Corps Intranet (NMCI), and adding Surveillance Towed array Sensor System (SURTASS) ships to the Information Technology for the 21st Century (IT-21) matrix, Fleet interoperability and ISR effectiveness will be enhanced while long-term C4I costs are being minimized.

The Advanced Deployable System (ADS) is a rapidly deployable, battery-powered, passive acoustic undersea surveillance system for littoral areas. It is modular and configurable for specific missions and can be covertly deployed. At-sea test events were successfully completed in April 2001.

Signals Exploitation and Information Warfare

In support of knowledge superiority, SPAWAR also provides the Fleet an IUSS-like capability for the RF environment. Its systems, known commonly as Tactical Cryptologic Systems (TCS), provide access to an adversary's geolocation, communications, and computer networks. TCS equipment locates emitters, cues other sensors, enables over-the-horizon targeting, support the exploitation of computer networks, and provides battle damage assessment. To provide this unique support to the battlegroup, TCS must have access to the growing set of low power, line of sight signals-of-interest in wireless computing and communicating networks. These advanced signals of interest are proliferating at an alarming rate as part infrastructure networks of foreign nations as well as of terrorist organizations. In partnership with NAVSEA and NAVAIR, SPAWAR continued its efforts in FY 01 to place TCS capabilities in both UAVs and in aircraft organic to the battlegroup.

SSEE Increment "E," scheduled to enter the Fleet in 2004, is the initial version of a Maritime Cryptologic System for the 21st Century (MCS-21). It will gradually replace existing surface ship signals intelligence, or SIGINT systems. MCS-21 is envisioned as a single, scalable, interoperable, evolutionary Information Warfare system that will eventually replace the numerous transportable SIGINT, Radio Direction Finding, Electronic Warfare, Computer Network Attack, and Computer Network Defend systems in use in our Fleet platforms.

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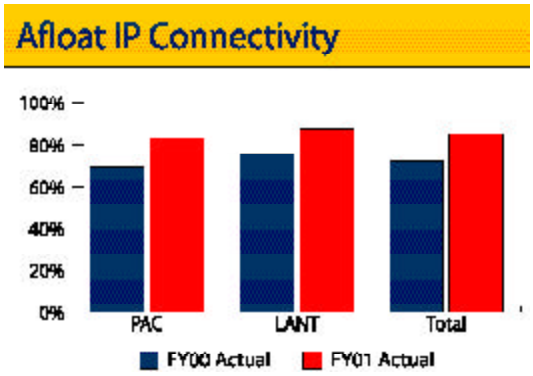
Afloat Connectivity

Approximately 60 percent of all Navy berths currently have an IP capability.

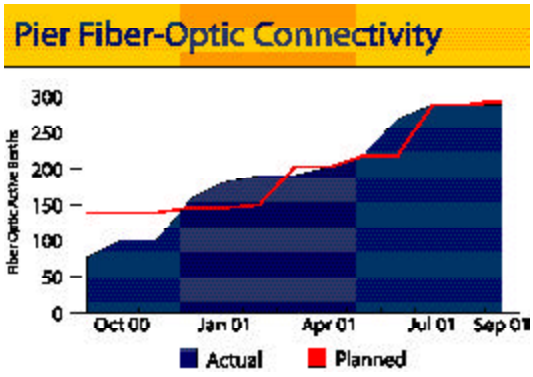
Shipboard IP Connectivity

Over the last few years, SPAWAR has worked aggressively to attain basic Internet Protocol (IP) connectivity across the Fleet. IP connectivity is provided by a reliable and scalable Local Area Network (LAN), a sufficiently large Radio Frequency (RF) "pipe", and a sufficient number of computers for going online and accessing web-based applications. As a result of SPAWAR's efforts in this area in FY 01, we reached an afloat IP connectivity of 82 percent for the Fleet.



Pier IP Connectivity

Approximately 60 percent of all Navy berths currently have an IP capability. In FY 01, SPAWAR provided fiber optic pier connectivity to over 200 berths located at bases in the United States. Pier connectivity under the Base Level Information Infrastructure (BLII) program was completed for 14 naval bases, both in and outside the United States. The chart below addresses our progress so far.



Information Security-Processing and Communicating Securely

In addition to the increasing ability to monitor an adversary's sensors, communications, and networks, it is also vital that we ensure that our own systems and communications paths are protected.

Information Assurance (IA)

As the Navy's leading agent for enhancing and transitioning IA capabilities, SPAWAR has specifically focused on the current readiness of its information security systems for the Fleet. In FY 01, SPAWAR increased its collaboration with its Navy, Joint/Coalition, and science and technology partners, yielding significant results in the design and testing of new IA product areas such as Electronic Key Management System and Public Key Infrastructure initiatives. Within the Department of the Navy, SPAWAR rendered significant security enhancements while integrating the security requirements and architecture for NMCI, BLII OCONUS, and IT-21 programs. Through active participation in Fleet Battle Experiments, SPAWAR has demonstrated important IA technologies such as biometrics, firewalls, and intrusion detection devices that proved to be highly successful, yielding significant data for future products.

SPAWAR also supports the Fleet's cryptographic and secure telephone equipment. In support of the Cryptographic Equipment Repair Program, SPAWAR conducted 3,966 equipment exchanges, 932 equipment screenings, 2,603 equipment repairs, and 480 technical assists in FY 01.

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Homeland Security and Force Protection Contributions

Following the terrorist attacks on 11 September, SPAWAR has placed additional emphasis to ensure delivery of the best capabilities possible for supporting any contingency response. Steps we have taken during the past year have positioned us to be responsive to accelerating and changing mission needs. The war on terrorism will, in many ways, be an information war, to which SPAWAR has contributed by its Homeland Security (HLS) efforts and the design of new force protection systems for our forces afloat. Now more than ever, knowledge superiority and integrated C4ISR products are essential to our success, both as a Nation, as well as a Service.

Contributions to Homeland Security

Pentagon Rebuild Efforts

In response to the attack on the Pentagon, SPAWAR provided significant contributions while restoring C4ISR capabilities within the Navy Command Center. On 12 September, SPAWAR had a team on-site at the Pentagon, assisting Navy staff in restoring essential Chief of Naval Operations (CNO) command center capabilities. With personnel from SSC Charleston and SSC San Diego, in addition to our Army counterparts, SPAWAR has been working persistently at restoring capabilities involving UHF SATCOM, GCCS, teleconferencing, and METOC. SPAWAR is presently working to establish command center capabilities in interim facilities by March 2002.

World Trade Center Efforts

In coordination with the Office of the Secretary of Defense and the Army-Marine Corps Unmanned Ground Vehicles/Systems Joint Project Office, SSC San Diego deployed three urban robots to New York City to assist in the search and recovery efforts at the World Trade Center. SSC San Diego personnel provided the technical coordination and operation of the robots. At the World Trade Center site, SSC San Diego personnel participated as part of a robotics team sponsored by the National Institute for Urban Search and Rescue in support of the Special Operations Branch of the Fire Department of New York.

Support for USNS Comfort

SPAWAR was also called upon to establish pier connectivity in New York City for *USNS Comfort*. SPAWAR's mission was to provide secure and nonsecure data and telecommunications and video teleconferencing capabilities to support the *Comfort's* casualty support mission. Teaming with Naval Computer and Telecommunications Area Master Station Atlantic, personnel from SSC Charleston were onboard, advancing the installation effort that same day. Advance coordination with AT&T and Verizon for telecommunications connectivity support (T-1 point-to-point Lease line) ensured that all technical elements were in place to support the *Comfort* when it arrived. Because of the efforts of SPAWAR personnel, service to the ship was established within 2 days and was maintained until *Comfort's* departure several weeks later.

Secure Voice Capabilities to the Fleet

SPAWAR provided over 1,600 secure telephones — more than seven times the normal monthly output — in support of HLS and the war on terrorism. More than 180 hours of technical assistance support calls were provided to the Fleet — more than three times the normal volume. Assistance was also provided through SPAWAR support of Secure Voice Bridge conference capabilities for NAVSEA, Navy Integrated Control Point, Coast Guard, and Marine Forces Reserve.

Improved Interoperability with the Coast Guard

SPAWAR improved communications interoperability between Navy and Coast Guard units in support of immediate HLS missions. This support included efforts to provide INMARSAT (support voice and IP communications to better integrate with Navy battlegroups), SATCOM capabilities, electronic systems readiness grooms, quick-response technical support, and communications interoperability with local law enforcement.

"Red Cell"

SPAWAR stood up a "Red Cell" to identify weaknesses in our C4ISR systems and to look for opportunities to rapidly insert advanced technologies. The Red Cell will exploit science and technology developments in government and industry to transition enhanced capabilities to SPAWAR's product line. We are working with the Naval War College on a series of HLS-focused war games to determine our vulnerabilities and identify potential corrective actions.

Afloat Force Protection Systems

As threats to our naval forces rise, the Navy continues to invest in its force protection systems. Working with both NAVSEA and NAVAIR, SPAWAR is providing a robust set of capabilities to prevent future *USS Cole*-type incidents, as well as to support HLS efforts for our shore installations.

Inshore Defense and Waterside Security

During FY 01, SPAWAR has worked persistently to improve the operational effectiveness and reliability of inshore force protection capabilities, including providing a capability to detect and track surface and subsurface targets in the vicinity of piers. Within 24 hours of the Fleet's request, SPAWAR delivered a new Mobile Inshore Undersea Warfare-System Upgrade (MIUW-SU) production unit which provides a significantly more mobile configuration, providing the Fleet with increased options and flexibility for deployment. In addition, various upgrades to the thermal and visual imaging sensors, including Electronic Support Measures, radar, and communications systems, were provided in FY 01 for the 17 MIUW-SUs already fielded.

Additionally, in FY 01, SPAWAR completed a coastal surveillance system at the navy's Fifth Fleet heaquarters in Bahrain. Now fully operational, the system markedly improves situational awareness of surface activity around Bahrain and enhances the force protection posture for our deployed operational units.

Force Protection Surveillance System

Following the attack on *USS Cole (DDG-67),* SSC Charleston helped design and deploy the Force Protection Surveillance System, a four-camera system providing 360-degree viewing coverage to assist a ship's overall force protection efforts. The system was initially deployed on *USS Constellation* in March 2001 and is scheduled to be deployed on all Pacific Fleet aircraft carriers in the next 2 years.

Base Security

SPAWAR is also developing systems to increase the security of our Nation's base facilities. In FY 01, SSC San Diego commenced installation of a facial recognition system and installation of an Under-Vehicle Inspection System, both being operationally tested and evaluated at the Submarine Base, San Diego. The Under-Vehicle Inspection System is an array of 9 high-resolution cameras with 12 high-output lamps enclosed in a grated housing. The system includes cabling, controls, and a 37-inch gas plasma flat-panel display. When a vehicle passes over the unit, a high-resolution image of the vehicle's undercarriage is displayed to the operator for assessment.

Following the attack on *USS Cole (DDG-67),* SSC Charleston helped design and deploy the Force Protection Surveillance System...

New Technologies Delivered

Knowledge Wall:

Developed by SPAWAR Systems Center (SSC) San Diego and fielded on Third Fleet flagship *USS Coronado (AGF-11)*, the Knowledge Wall is one of SPAWAR's more tangible representations of its "speed-to-capability" efforts. The Knowledge Wall is an innovative way for a command center to display multiple reconfigurable screens of information for any tactical or strategic situation. It is the first step in the innovative process of reconfiguring and displaying information in a Web-enabled environment. In addition to visualizing different operational environments, the warfighter also can collaborate with other units/commands using a virtual "whiteboard" tool, and can also access information from various

This extensive list of emerging technologies includes:

- Jini network computing,
- ultra-thin clients,
- littoral mobile wireless networking and communications,
- collaborative planning and data mining tools,
- information/data fusion and compression algorithms,
- multiband phased array antennas,
- buoyant antennas,
- acoustic communications,
- voice over IP,
- secure smart cards,
- high resolution plasma displays,
- speech/natural language processing (detection and extraction),
- 3D visualization,
- hyperspectral imaging for surveillance and targeting,
- command and decision walls and
- line-of-sight/beyond line-of-site networking.

During the past year, more than 100 emerging technologies were identified for their potential value as solutions to Fleet C4ISR challenges. Many of these technologies were found mature enough to undergo immediate testing in operational Fleet environments as candidate solutions to near-term NCW problems. Others are still being investigated, assessed and tracked for their potential to meet future NCW needs as well as the challenges of Joint Vision 2020.

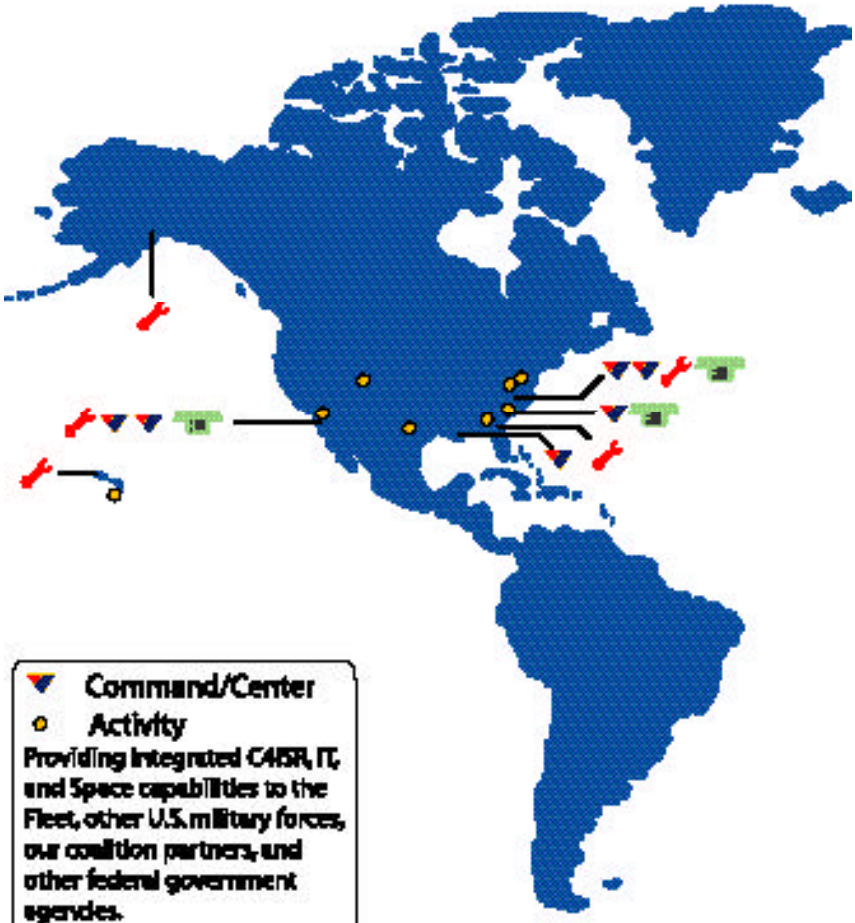
SPAWAR's investigations of technological solutions relate to problems affecting bandwidth, manning, distributed (afloat and ashore) command and control staff functions, remote network management, wireless line - of - sight communications, network architectures, decision support, interoperability with allies and coalition partners, topside antennas, and a multitude of other C4ISR shortfalls.

SPAWAR is working aggressively to reduce the nominal 18-month timeline for introduction of "fast track" technologies into the Fleet. Among the technologies on SPAWAR's fast track are ultra-thin clients, Jini network computing, remote network management and monitoring, secure smart cards, distributed collaborative planning and training tools, wireless LANs, and speech/language processing.

Introduction of GIGe Network:

In FY 01, SPAWAR began introducing Gigabit Ethernet (GIGe) technology to replace Asynchronous Transfer Mode (ATM) equipment among our naval networks. Migrating to GIGe technology will reduce system complexity and lower life cycle costs. It is easier to install, set up, administer and maintain; and is rapidly becoming the industry standard. Ships have yielded a 30 percent reduction in operator training time based upon initial installations completed in FY01.

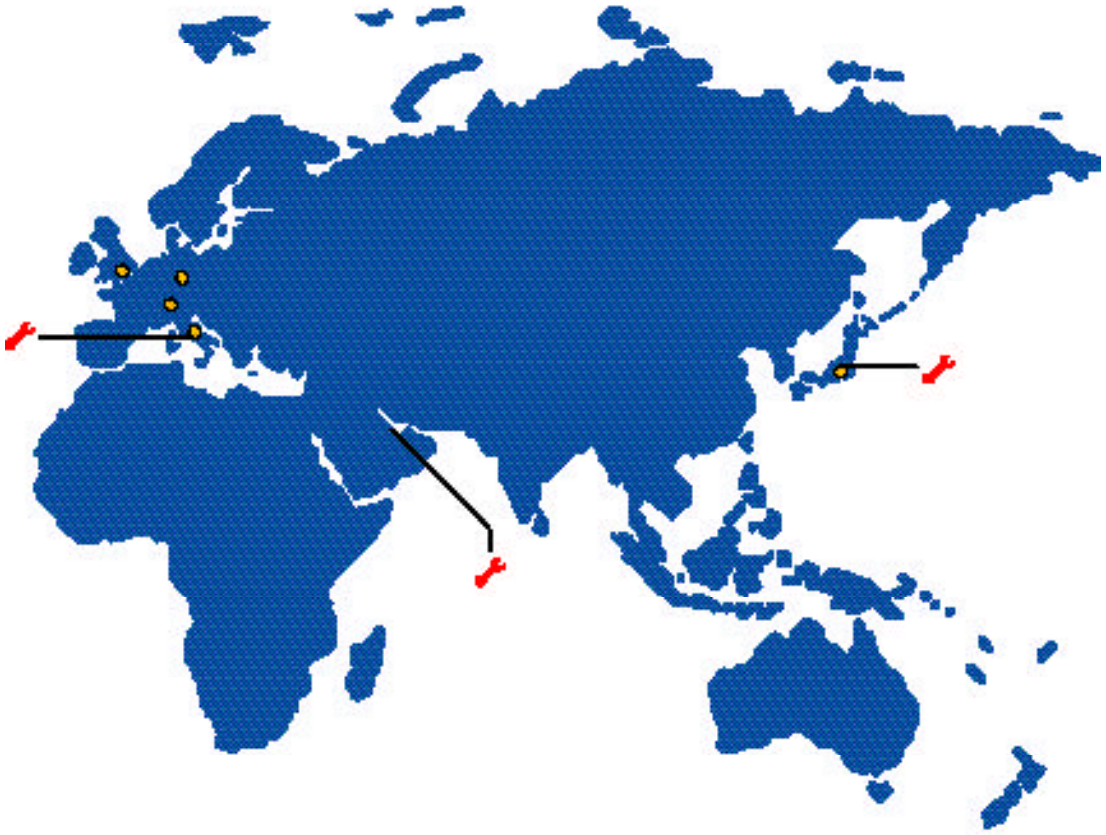
24/7 Support to the Fleet Worldwide



Command/Center
Activity

Providing integrated C4ISR, IT, and Space capabilities to the Fleet, other U.S. military forces, our coalition partners, and other federal government agencies.

HQ-	San Diego, CA
Centers-	Chesapeake, VA
	Charleston, SC
	New Orleans, LA
	San Diego, CA
Activities-	Worldwide



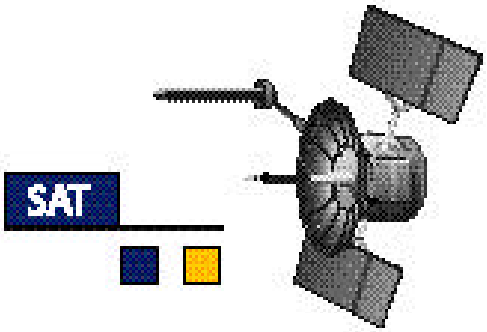
Help Desk

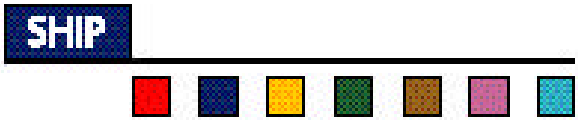
Providing remote technical and logistics support for C4ISR systems, access to answers for technical questions, solving logistics problems, resolving supply issues, and minimizing site visit requirements.

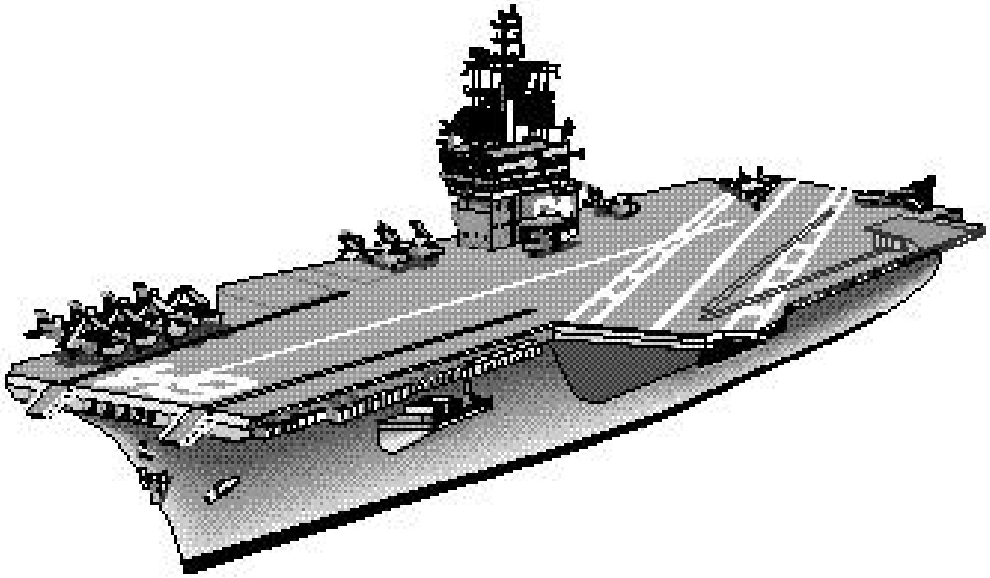
FSET

Providing technical expertise to support C4ISR systems D-20 through deployment to BG/ARGs and regional NOCs, as well as appropriate system training.

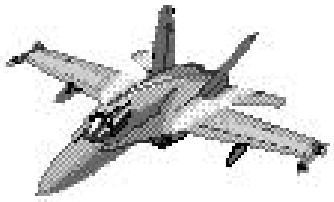
SPAWAR Services and Products





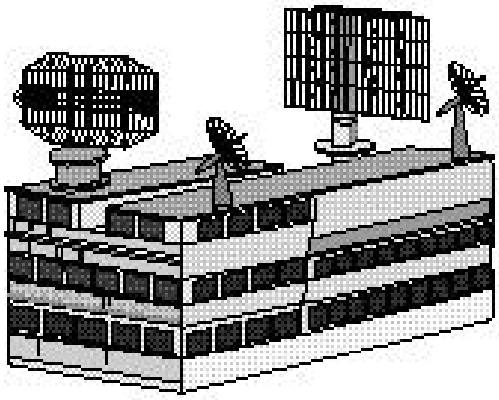


Services	Command, Control & Communications	Data Links	Space & SATCOM
Products	GCCS-M NTCSS CUBI SubHDR DMR NAVMACS2	CDL-N JTIDS TBMCS Integration Naval JSTARS Interface	CWSP MUOS INMARSAT GBS UFO



PLANE

SHORE



SUB

PCs/LAN	Information Security	ISR	Support Systems
DMS	EKMS	IUSS	NTCSS
NMCI	Navy PKI	SURTASS	VIPER
ISNS (GiGa & ATM)	Crypto Devices	ADS/FDS	JSORTS
JWICS	Network Security Systems (firewalls, VPN, IDS)	CDBLU	Smart Card
SCI ADNS		CDF	NALCOMIS
RF E-mail		SSEE	

Fleet System Support

System Readiness

Operational Availability, or "Ao," is published for each system in its Operational Requirements Document, thereby quantifying the system's availability to perform its designed function. SPAWAR has historically exceeded this availability threshold for most of its systems. Although we have traditionally measured Ao for individual systems, we are now evolving toward an end-to-end Ao measurement process that will critically evaluate and report the macro-availability of an entire suite of systems. By populating a formula with the Ao's of specific systems, the user will have a quantified evaluation of that unit's full C4ISR system availability.

The chart on the following page indicates the availabilities of selected SPAWAR systems. With the exception of one SHF variant, all systems exceed their required threshold availability. Because of a lack of spares, however, the observed value for the WSC-6(V)5 SHF SATCOM terminal is 0.82, while its threshold is 0.85. We are actively engaged in purchasing additional spares to remedy this problem.

Even though we are meeting most of the required Ao thresholds, we are not satisfied with our performance. We are holding monthly readiness reviews to proactively identify issues. This will allow us to meet the higher Ao goals that is expected by the Fleet.

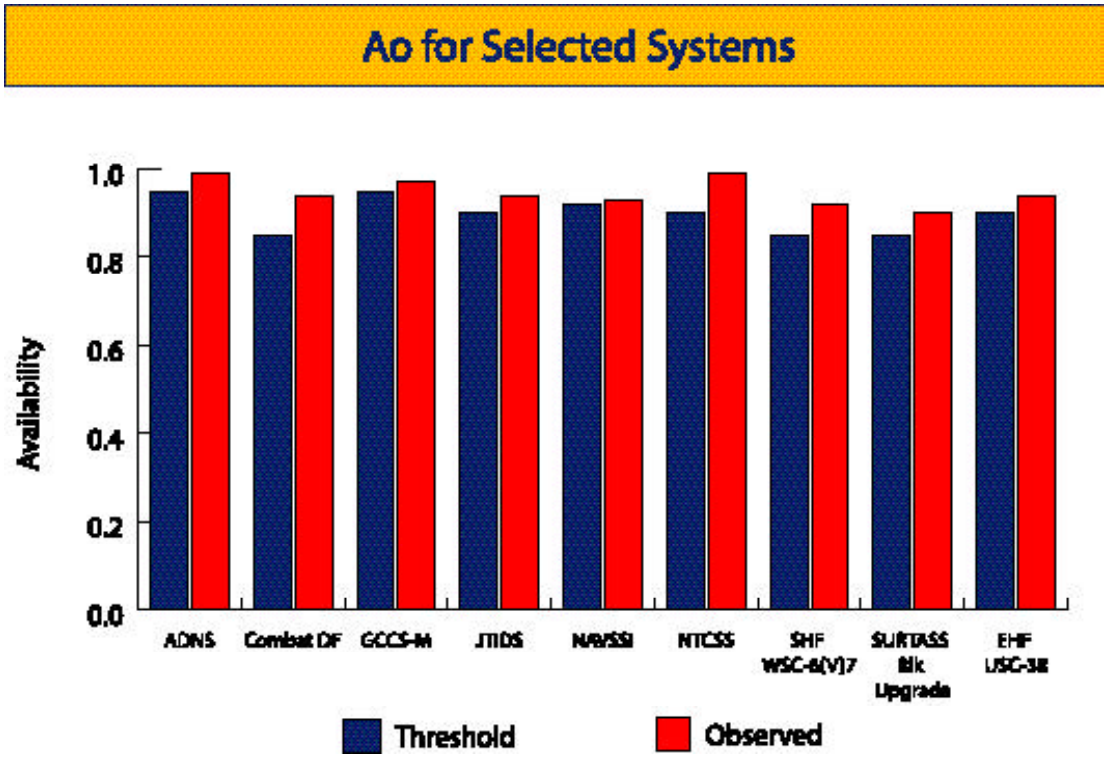
Fleet System Engineering Teams (FSET)

In FY 01, SPAWAR improved our existing customer support initiatives and originated several new ones. The FSET program deployed over 80 personnel around the world to provide training, maintenance, and problem-solving assistance for C4ISR systems. Our FSET teams provide technical advice to the battlegroup commander for C4ISR systems, working day-to-day to resolve integration and technical issues during the Inter-Deployment Training Cycle (IDTC), and continuing that support for the battlegroup throughout the deployment.

Fleet Feedback in FY 01

"Congratulations on your exceptional performance and contribution to the readiness of USS HARRY S TRUMAN CVBG and USS NASSAU ARG. Three months ago, the CVBG and ARG had more CASREPs than the historical average. Through your direct efforts, both ships were able to deploy in the best material condition in recent history."

– VADM Mike Mullen
Commander, Second Fleet



The submarine force has an analogous Mobile Training Team that provides end-to-end system connectivity, IP theory, Commercial Off-the-shelf/Government Off-the-Shelf integration, theory-to-practice and trouble-shooting/configuration methods to system operators (shipboard Electronics Technicians/ Fire Control Technicians) and administrators.

In-Service Engineering Agent (ISEA)

Before FY 00, each program office funded task statements to the appropriate SSC. That process was identified as inefficient, redundant and without standardization. By consolidating approximately half of the program offices' ISEA/Fleet Support funding in FY 01, SSCs now receive one task statement each year instead of the dozens they received previously. These statements now contain common language that applies to a SSC providing the same kind of service, such as ship visits and post-installation design improvement support. Last year was spent working the mechanics of the consolidated ISEA process, including reporting formats and requirements, outyear budgeting processes, and the identification of redundancies within each SSC and across system support offices. In FY02, we will focus on identifying the savings yielded by this process.

Help Desk

In FY01, SPAWAR integrated our 24/7 Corporate Help Desk operations with the Navy Integrated Call Center, a NAVSEA phone and web portal accessing point for all System Commands. Each SSC began transitioning to a remedy trouble ticket system and a replicating linkage between the three centers as well as a corporate server on which a full SPAWAR trouble ticket database will reside. This single point repository will provide historical, non-CASREP information about all of SPAWAR's C4ISR systems for trend analysis purposes.

In FY02, SPAWAR will align Help Desk operations with the Navy Distance Support Architecture. We will be enacting a SPAWAR distance support policy, which will further consolidate Help Desk functions, and provide seamless sharing of data with the Navy Integrated Call Center, Fleet Training Support Center, and other distance support providers resulting in one source for system readiness metrics. Additionally, SPAWAR will establish SIPRNET "chat" capabilities to allow real time remote technical assists that will reduce cycle time and, at the same time, reduce the number of site visits.

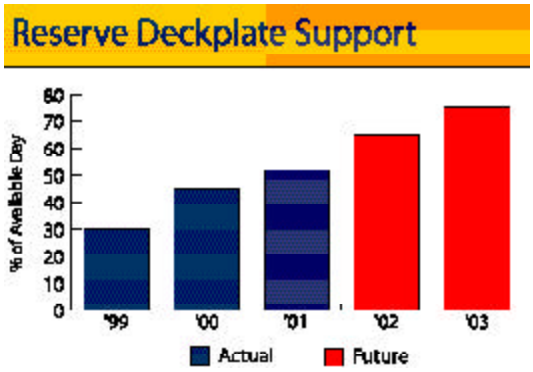
Ship Visits

SPAWAR program managers and senior leadership have made it a priority to personally visit ships during the installation process to address Fleet concerns first hand. A ship visit metric was established to track the number of customer visits by SPAWAR management as well as the resolution of action items taken during these visits. This has been highly effective in understanding the priorities of our customers as well as providing SPAWAR deckplate feedback regarding the quality of SPAWAR installations and training.

Reserve Support

To better align C4ISR solutions for the Fleet, the SPAWAR Reserve Force (21 units, 500+ personnel spread across the country) restructured itself to more directly serve our Fleet customers. The overwhelming majority of our Reserve force is organized to support our four Fleet Support Teams (FSTs). These FSTs in turn, align to directly support our deploying battlegroups. Each FST is divided into five major programs that directly support the deployment minus 30 month process (D-30) for scheduling afloat installations:

(1) Configuration Validation
(2) Installation support
(3) Battle Group Systems Integration Testing (BGSIT) augmentation
(4) Integrated Logistics Support (ILS) Assessments
(5) IT21 support and training.



The value of this realignment was underlined during mobilization efforts in the wake of September 11th. With the help of our new Reserve Virtual Program Office, over 100 Reserve personnel were immediately activated and engaged, to support headquarters, SSCs, and the SPAWAR Operations Center. In particular, SPAWAR's Reserve force provided the leadership to manage the Operations Center throughout the crisis, becoming SPAWAR's focal point to meet emergent needs.

Business Applications

SPAWAR has developed several optimized solutions to provide streamlined support for our systems and logistics agencies that support the Fleet and Operating Forces.

Smart Card

Over the past year, SSC Chesapeake distributed Navy Smart Cards to approximately 10,000 Sailors and Marines in the *George Washington* battlegroup. SSC Chesapeake is in the process of distributing Smart Cards to three additional Atlantic Fleet battlegroups. SSC Chesapeake is also working with our DoD partners during the transition to a Common Access Card that will eventually serve as a service member's official identification card.

Improved Fleet Logistics and Software Support

Navy Tactical Command Support System (NTCSS) and Maritime Logistics Data Network (MLDN)

SPAWAR provides optimized products, including NTCSS which, when coupled with the MLDN, provides real-time data replication to central repositories ashore. The system moves workload ashore, improves situational awareness, approaches total asset visibility and reduces the workload burden on our Sailors and Marines. In addition, SPAWAR's Optimized Organizational Maintenance Activity (OOMA) system "Top Tier" provides instantaneous access to squadron data across the entire aviation community.

Naval Aviation Logistics Command/ Management Information Systems (NALCOMIS)

NALCOMIS OOMA provides aviation supply and maintenance crews with real-time configuration, usage, and maintenance status. OOMA gives maintenance personnel the ability to document and manage tasks,

and review technical directives, current usage on engines and life-limited components. It also manages periodic inspections and maintenance of equipment. Prior to OOMA, access to data averaged about 45 days. Now, squadrons are able to replicate changes to NAVAIR's data archives within 12 to 15 minutes of their occurrence. OOMA is integrated with ground support stations and supports maintenance-based-on-performance data. Using its ability to replicate changes to aircraft and equipment, and usage and configuration between squadrons, managers can readily access data archives to review aircraft status, hours flown, configuration, and other key readiness criteria. Thirty-seven squadrons currently use OOMA both afloat and ashore.

MLDN – Reducing Workload Afloat

"MLDN is today's best automation tool to improve readiness, meet the warfighter's data and logistics requirements and improve QOS afloat through labor efficiencies,"

-VADM John Nathman
Commander,
Naval Air Forces,
Pacific

Asset Tracking Logistics and Supply System (ATLASS)

Another optimized SPAWAR application is the Marine Corp's ATLASS II+. Using a logistics relational database management system and RF automated identification technology, ATLASS II+ provides near real-time status of all supply, maintenance, and readiness functions. Its capabilities include organizational inventory, preventive and corrective maintenance, equipment records, requisitioning, receipt control, and modifications and calibration data and analysis. The RF data input device enables wireless computing featuring bar code scanning and touch-screen control for inventory tracking and materiel management. It also provides maintenance personnel with access to vital supply inventory availability via remote access.

As a result of ATLASS II+'s enhanced technology, customer wait time has been reduced from 9.9 days to 1 day. Wholesale customer wait time has been reduced from 20.4 days to 8 days. The application has been successfully deployed with the 22nd and 24th MEUs in numerous field exercises to Fort Bragg, NC and Twentynine Palms, CA.

SAMS

SSC Chesapeake is modifying the Shipboard Non-Tactical ADP Program (SNAP) Automated Medical System (SAMS) to support the Common Access Card. The goal is to establish medical records aboard ship, including records of shots and allergies.

SAMS reduces administrative workload, establishes standardization, and improves the quality of health care documentation in the medical environment. In FY 01, the SAMS team upgraded their product to a Windows version encompassing Mobile Computing and Smart Card capabilities. Since April 2000, the SAMS team has successfully converted 316 afloat and 1,022 shore activities. More than 5,000 users now access SAMS daily. Operational reliability of the system is outstanding, and 96 percent of trouble calls are resolved in less than 4 hours (the remaining 4 percent in less than 48 hours).

SAMS reduces administrative workload, establishes standardization, and improves the quality of health care documentation in the medical environment.

As a result of SAMS' wide acceptance, excellent success rate, and invaluable benefits to deployed medical departments, the program has been selected as a core component of the Theater Medical Information Program-Joint (TMIP-J). TMIP-J and SAMS will allow the uniformed services to communicate and integrate current medical information. The major benefit of the combined program is the ability of all the services to process information and identify medical readiness needs prior to deployment.

Fleet Training Support

Fleet C4ISR Familiarization Seminar

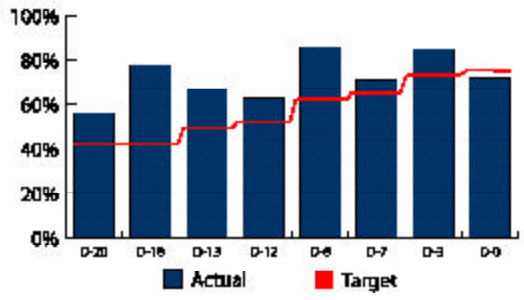
In the training arena, SPAWAR created and hosted the Fleet N6 C4ISR Familiarization Seminar, a 3-day series of Fleet-oriented C4ISR briefings emphasizing SPAWAR C4ISR programs and initiatives currently fielded in the Fleet. The briefings provide an understanding of SPAWAR programs to Staff N6 and Command ship C4ISR officers. More than 200 personnel attended in FY 01. For many staffs, the course is a prerequisite for relief turnover for C4ISR billets (see inset).

Integrated Battle Force Training (IBFT)

The IBFT process aligns training management with the D-30 process. Through a web-enabled database, it documents training requirements and provides on-line nomination and real-time training metrics during a ship's IDTC. Training coordinators on the waterfront schedule training with each deploying CVBG and ARG. In addition, Mobile Training Teams provide our Forward Deployed Naval Forces (FDNF) with training to support critical C4I capability. SPAWAR completed IBFT training for five deploying battlegroups in FY01 as well as four battlegroups due to deploy in FY 02.

SPAWAR also partnered with Fleet training activities to stand-up a Training Center of Excellence in Norfolk that provided five new courses (including IT21 for Managers and Masters-level End-to-End Systems Administration training) to over 2000 Sailors. A similar site will be established in San Diego in FY02.

IBFT Training Status



SPAWAR Institute

The SPAWAR Institute was established to provide an end-to-end, integrated C4ISR training process that responds to Fleet requirements. The Institute forums are designed to provide direct interaction with Fleet personnel for answering questions and providing focused training on C4ISR systems.

SPAWAR adopted a collaborative strategy that enhances current training techniques and coordinates existing training processes while also investigating and utilizing proven advanced distributive learning capabilities. These capabilities include live and taped streaming video, collaborative-based and video teleconference training, and Game Electronic Technology intended to align with the IBFT process. SPAWAR provided training to hundreds of Fleet personnel through the institute in FY 01.

Fleet C4ISR Familiarization Training:

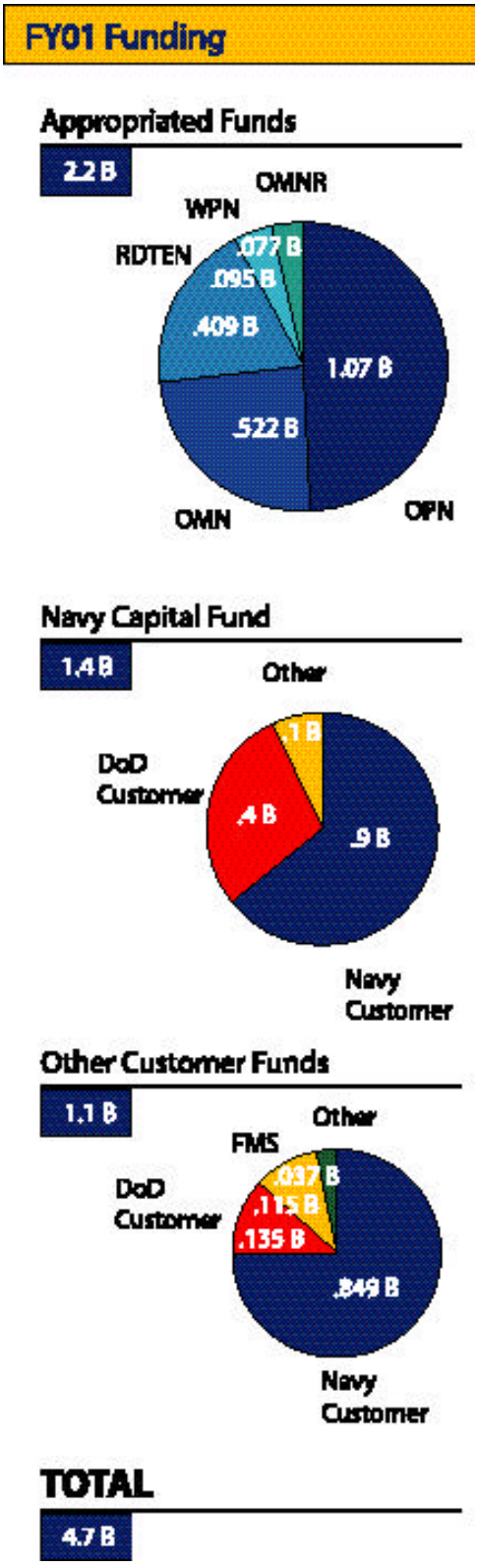
"It's the best way to get a person up to speed on afloat C4ISR in a hurry…. Finally, a Navy course with no wasted time."

-senior Atlantic Fleet Naval Officer

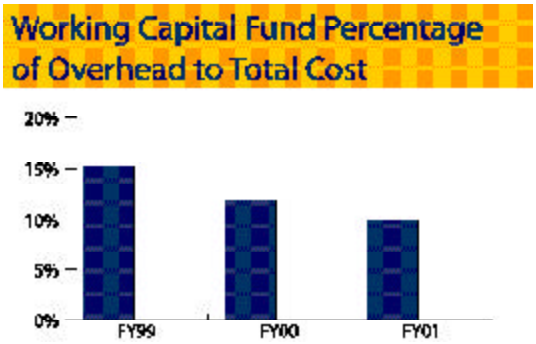
Cost control

In FY01, SPAWAR continued to meet the challenge of understanding and controlling our costs. We do so by reviewing and improving our business processes across the SPAWAR Corporation. For example, we introduced changes in our installation process, initiated a Business Resource Management (BRM) Cell to provide better visibility to cost and the analysis/integration of all Command Resources and increased the implementation of Earned Value Management (EVM) principles to better mange technical, schedule, and cost risks.

Through initiation of a SPAWAR Cost Task Force and the BRM cell, SPAWAR is creating the foundation to open a dialogue with our customers on ways to control our overhead costs and prioritize requirements.



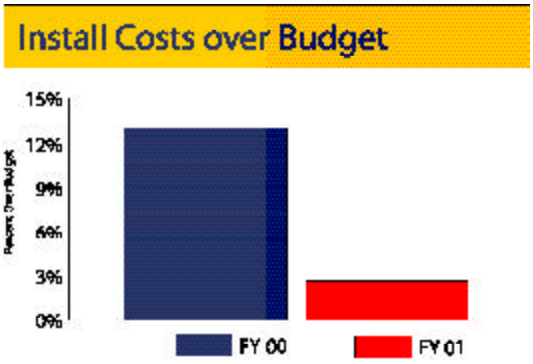
This communication will enable the integration of Fleet technical requirements into our funding allocations using the IT-21 planning matrix. These efforts have also resulted in development of a common business financial management structure across the Command and standardized usage of the Work Breakdown Structure (WBS). These initiatives are improving SPAWAR's understanding of what drives cost, how we can better control them, and how to better serve the end customer in the long run. As an example, the graph below shows SPAWAR's trend of decreasing overhead costs for SSC San Diego and SSC Charleston.



Installation Costs

In FY 01, SPAWAR significantly improved our ability to complete installations within cost and schedule due to the process initiatives begun in FY 00. The cost of installations over budget was reduced from 13% in FY 00 to 2.7% in FY 01.

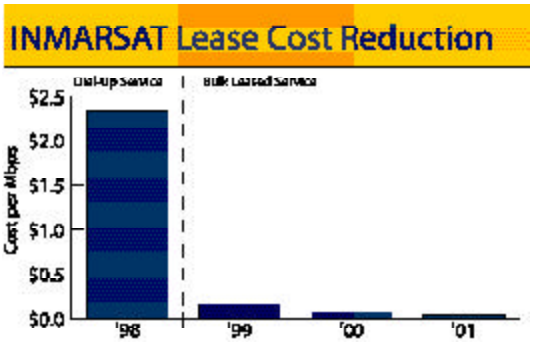
As we improve our installation processes and increase efficiencies, greater cost savings are anticipated for FY 02. An increased awareness on balancing cost and schedule has led to greater scrutiny of the cost impact of all production decisions. The FY 00 initiative to complete advanced ship installation planning has resulted in more than a three-fold increase in the number of installation drawings provided well before the start of a ship's maintenance availability, directly leading to cost savings. In support



of SPAWAR installations, SSC San Diego and SSC Charleston awarded the first integrated installation contracts last year. These contracts consolidate individually managed installations into a single, coordinated effort. This results in less disturbance to Fleet operations, improved interoperability, more effective testing and training and lower administrative, management and performance cost.

Cost Avoidance

INMARSAT represents an example of how SPAWAR is reducing costs. With INMARSAT, SPAWAR has realized an increase in bandwidth at a reduced cost. SPAWAR currently spends over $35 million per year on INMARSAT bandwidth. Our pending enhanced INMARSAT procurement features advanced modems plus antenna handover, which should more than double the effective throughput per ship as well as increase channel availability, all for the same cost.



Aligned with the Fleet

Time Critical Strike

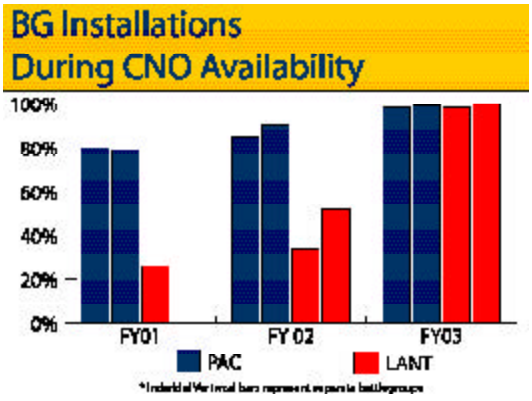
As a result of extensive liaison with the Maritime Battle Center and participation in the Fleet Battle Experiment (FBE) series, SPAWAR has enabled a bridge between prototype/ experimental capabilities and Programs of Record (POR) in support of numerous operational mission areas. In particular, SPAWAR's efforts in support of tactical Time Critical Strike requirements have proven exemplary in the management of end-to-end capabilities. This also reflects SPAWAR's commitment to integrate emerging technologies with Fleet doctrine, accelerating the transition from prototype to a funded POR. SPAWAR added engineering rigor to the Fleet's experimentation process by integrating TCS capabilities across programs of record using its evolving internal intiative called Horizontal Integration (HI).

Similarly, as a result of lessons learned from participation in the FBEs, SPAWAR has developed a Time-Critical Strike prototype in conjunction with other NAVSEA and NAVAIR. This innovative prototype has been used for demonstrations and briefings of national and naval leaders, and it has raised awareness across the Fleet of potential solutions for the coordination, streamlining, and merging of numerous operational capabilities across programs, projects, and Systems Commands. The Time Critical Strike capability is based on technical, functional, and programmatic dependencies that will enhance inter-operability and potentially save the Fleet hundreds of millions of dollars while providing better warfighting capabilities at a faster rate of introduction.

Maximizing Installations During CNO-designated Maintenance Availabilities

As another reflection of its alignment with Fleet requirements, SPAWAR is aggressively working to schedule and complete all C4ISR installations within CNO-designated maintenance availabilities.

Prior to FY 01, the installation goal for SPAWAR was to complete all installations before the Target Configuration Date, notionally 6 months prior to a ship's deployment. However, early IT-21 installs, especially in FY 98 and FY 99, often attempted to do 30 months of planning and execution in just 30 weeks. This resulted in late installations, with adverse impacts to the IDTC. FY 01 became



a transition year. The goal for FY 02 is to perform all installations within scheduled maintenance availabilities. Combined with a new planning cycle that begins 30 months prior to deployment, our initiative promises to allow sufficient time for ship checks and development of installation drawings, as well as proper lead time for equipment procurement, all while dramatically decreasing the impact to the ship's force training and readiness.

Speed-To-Capability and Innovation

SPAWAR worked with Navy staff and operating forces to address the challenge of providing thoroughly engineered and integrated capabilities while at the same time being responsive to changing warfighter requirements and incorporating evolving technology. Traditional engineering practices and acquisition regulations stretch out the development, procurement and fielding timelines. These "stretched" timelines often result in delivery of capabilities, that, while well-engineered, satisfy yesterday's demands. Under "Speed to Capability" initiatives, several changes are underway to shorten the connection between what the warfighter needs and what SPAWAR delivers. Our initial efforts have been focused in reconnecting with the Fleet and evolving the Horizontal Integration effort.

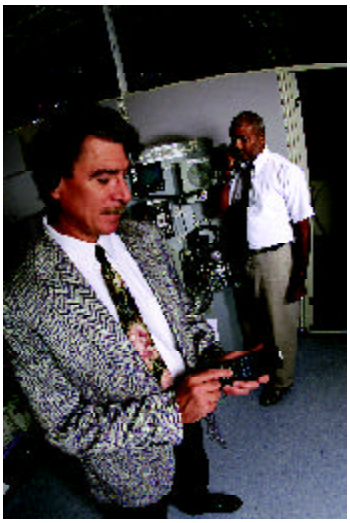
Reconnecting with the Fleet

SPAWAR is currently planning to implement a program to deploy our engineers to sea over the next year. SPAWAR technical experts will join battlegroups for key underway events during their IDTC to get hands-on experience with SPAWAR systems in an operational environment. Sitting side-by-side with the Fleet user, SPAWAR engineers will gain immediate feedback on the utility of their products and will use the opportunity to provide training and maintenance assistance to the Sailor. SPAWAR began this year to put in place processes and procedures to encourage and to capitalize on Fleet Innovation. The first step will be to establish an Innovation Manager to lead and manage the introduction of fleet, and industry innovations into the SPAWAR product line. The Innovation Manger will interact with the Fleet to solicit "good ideas," to lead feasibility studies on the incorporation of those ideas into current and future SPAWAR capabilities, and to pass those good ideas on to SPAWAR Program Mangers for procurement and fielding. SPAWAR is also working with Fleet CINCs and Commanders; Commander, Fleet Forces Command (CFFC), and Commander, Naval Network Warfare Command (NETWARCOM) to establish an Innovation Resource Pool to encourage deck plate innovation. This Resource Pool will provide "seed" money to selected innovations and will provide the resources until a POR incorporates the innovation.

Evolving Horizontal Integration

Currently under examination is an effort to evolve the Horizontal Integration process to establish an environment for significant experimentation and prototyping while preserving critical equities. The basis of this environment is the definition, development, and integration of a core infrastructure validated through traditional independent certification and test and evaluation requirements. Critical equities of operational availability, interoperability, and, where appropriate, weapons surety will be preserved. This infrastructure will proceed on a deliberate periodic timeline similar to other programs' block upgrade approach. Building on this foundation, focused initiatives or prototypes may be implemented either through separable adjunct processors or through plug-in additions within existing systems using redundancy or interface-based isolation from the baseline configuration. As elements of the prototype initiatives prove themselves and transition into production, they will be included in the core infrastructure and subjected to independent certification, test and evaluation, and programmatic oversight at the next regularly scheduled upgrade cycle.

Teaming Efforts With Our Partners



New Ship Construction

Common Submarine Radio Room (CSRR)

This effort leverages the External Communication System (ECS) development for the new construction of submarine classes USS Virginia and USS Seawolf to provide the engineering and architecture for the ECS modernization of the other existing submarine classes and the SSGN conversion.

SPAWAR has been an integral partner with NAVSEA and NAVAIR in terms of planning and delivering C4ISR systems for our next generation platforms. In FY01, SPAWAR provided technical and programmatic support to the Joint Command and Control ship JCC(X) program at NAVSEA for design and development of the C4ISR Mission Package. Also, SPAWAR designed C4ISR capabilities for CVN77/CVNX. SPAWAR developed plans to upgrade C4ISR capabilities using the IT-21 Block Upgrade approach on existing ships and classes now under construction including CVN-68, CVN-69, CVN-76, and DDG-51- and the LPD-17-class ships.

A reflection of increased coordination and teamwork with other defense agencies, such as NAVSEA and NAVAIR, is SPAWAR's design and installation of a C4ISR package for new construction ships. A constant challenge for the Navy is that the refresh rate for new technology rapidly exceeds the total time of new ship construction. The problem is exacerbated for ships with long lead times, such as aircraft carriers. To alleviate this problem, SPAWAR instituted a "blank page" in the construction contract for the ship's electronics package. This "blank page," known as the "Design Budget," was first used during construction of *USS Ronald Reagan (CVN-76)*. It has allowed phased delivery of information to the shipbuilder by the government, easier insertion of advanced communication technology, lower the cost of implementing changes, and providing greater design flexibility.

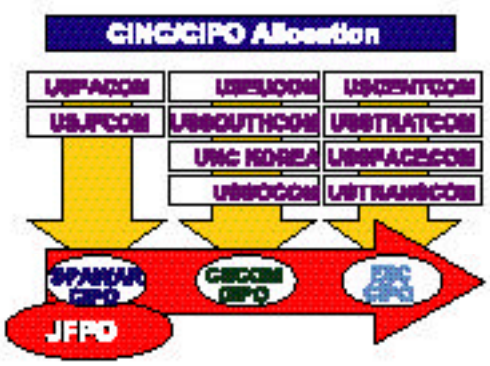
Increasing Interoperability With Our Joint and Allied Partners

Interoperability – it is a frequently expressed concern by our unified Commanders-in-Chief (CINC) and Allied leaders in terms of joint/coalition operational planning and execution, with a particular concern in the area of C4ISR systems. As the level of joint and coalition operations continues to rise, it is vital that we are able to plan, communicate and operate coherently with our joint and allied partners. In addition to the TBMCS and the Naval JSTARS Interface efforts mentioned earlier, our newly established CINC Interoperability Program Office and our Foreign Military Sales program support joint/coalition interoperability efforts.

CINC Interoperability Program Office (CIPO)

CIPO concept developed as a result of the efforts of the Office of Assistant Secretary of Defense for Command, Control, Communications, and Intelligence, along with the Air Force's Electronics Systems Command, the

Army's Communications and Electronics Command, and SPAWAR—known collectively as the Joint C2 Integration and Interoperability Group (JC2I2G). Each CIPO works in support of designated CINCs and is staffed by representatives of each service acquisition agency with a joint team organizational structure.



As shown in the CINC/CIPO Allocation chart, SPAWAR CIPO supports the U.S. Pacific Command and U.S. Joint Forces Command. SPAWAR also hosts the Joint Forces Program Office (JFPO) to facilitate horizontal integration of the CIPO efforts across respective CINCs for Joint Service interoperability improvements.

During FY 01, SPAWAR CIPO/JFPO supported 12 CINC assigned projects:

(1) CINC Systems Engineering Tool
(2) Joint Mission Force Shortfalls List/ Process
(3) Human Language Translator
(4) Tactical Wide Area Network Initiative
(5) Common Operational Picture
(6) CINC 21 Advanced Concept Technology Demonstration
(7) Joint Battle Management Information
(8) U.S. Maneuver Control System-USMC Tactical Combat Operations
(9) Air Force's Air Defense Systems Integrator
(10) Joint Interface Control Officer
(11) Joint Communications Infrastructure Synchronization
(12) Joint Integrated SATCOM Technology.

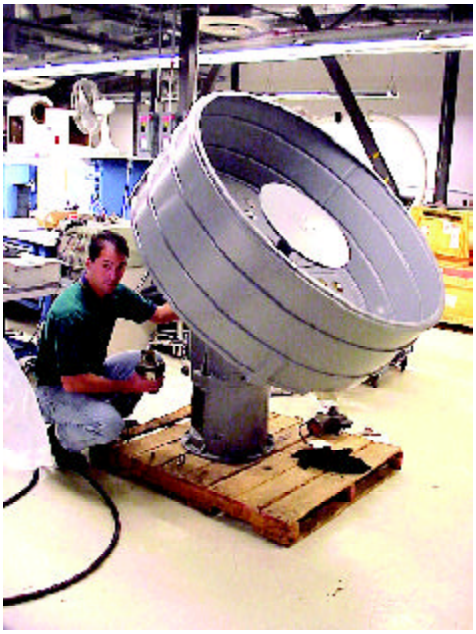
Foreign Military Sales (FMS)

SPAWAR's robust FMS program also plays important role increasing allied interoperability as well as providing an additional tool for regional engagement with foreign navies. In addition to increasing C4ISR commonality during contingency operations, it is vital that we increasingly make C4ISR interoperability a matter of routine. For example, the inclusion of Canadian Maritime Forces (CMF) in battlegroup deployments has necessitated increased reliance on C4ISR commonality. SPAWAR's FMS programs permit many coalition partners to acquire current and future C4ISR capabilities. These capabilities include Command and Control systems (GCCS-M), voice and data communication systems (SATCOM and data links such as Link 11, 16, 22, and MIDS), ISR systems, cryptographic systems (KG-40, ANDVT) and a variety of special systems. SPAWAR FMS program serves 46 customer countries with 413 programs valued at $1.8B.

Improving Communications with Our Sponsors

To better align our efforts in support of Fleet requirements, SPAWAR hosted an N6-SPAWAR leadership offsite conference coincident with the Fleet N6 conference in June 2001. The goal of the conference was to improve communication between OPNAV/ N6 and SPAWAR and to provide a single C4ISR voice in support of the Fleet. Some of the notable results of the offsite included: identifying a process to effect better joint response to short- or no-notice fiscal challenges; determining the feasibility of a trilateral requirements approval process that includes OPNAV N6, SPAWAR, and the Fleet N6s; exploring a rapid prototype process using Naval Fires Networks as the "test vehicle"; and forming a OPNAV N6/SPAWAR Leadership Forum consisting of the OPNAV N6 Division Directors and the SPAWAR Program Directors, to meet periodically and "shortstop" issues of concern, resolving these issues when possible.

Our Internal Workforce



In March 2001, SPAWAR unveiled a comprehensive Human Resources Strategic Plan designed to support the strategic objective of recruiting, developing, and sustaining a world-class civilian workforce.

To sustain our workforce, SPAWAR continues to focus on Quality of Service and foster innovation.

In the area of recruitment and retention, extensive analysis was conducted over the last year to ensure that SPAWAR's future workforce will be capable of meeting future requirements. Our efforts in the area of workforce shaping revealed that while we need to continue our aggressive recruitment and retention strategies, our retention figures of 92 percent are healthy. Our aggressive recruitment of cooperative education hires and new professionals is reflected in our 69 college visits, during which we gathering 828 resumes. From these, 95 offers were accepted, and 88 New Professionals and Co-ops were hired. As part of our recruiting effort, we are striving to meet diversity goals by recruiting at historically black and Hispanic colleges. Over the last year, SPAWAR recruiters visited 24 Historically Black and Hispanic colleges. We have also substantially increased the number of billets (31 officer, 7 enlisted) assigned to the National Reconnaissance Office (NRO) through its Space Field Activity, thus strengthening the Navy-NRO Partnership.

To sustain our workforce, SPAWAR continues to focus on Quality of Service and foster innovation. We have a robust honorary and incentive awards program, and over 11 percent of our workforce received special recognition last year. During FY 01, several SPAWAR employees were honored with the prestigious Department of the Navy Award for Procurement Excellence for their work in support of the NMCI. In addition, one of SPAWAR's most talented engineers was awarded for professional achievement at the Black Engineer of the Year Conference in 2001. As testament to SPAWAR's emphasis on innovation, in FY 01 SPAWAR's laboratories continued to serve as rich source for new inventions.

As part of SPAWAR's constant attention to corporate improvement and employee retention, each part of the SPAWAR organization conducts periodic assessments, and there are multiple mechanisms for employee feedback including electronic suggestion boxes and hotlines. Noteworthy in this

context is the written organizational assessment survey conducted by SPAWAR Headquarters. As an organization, SPAWAR HQ performed extremely well on the 17 selected characteristics of a high-performance organization, including in the areas of reward and recognition, diversity, innovation, fairness, treatment of others, teamwork, and supervision. SPAWAR is also committed to providing meaningful developmental opportunities for our employees, both within and outside the acquisition workforce. Currently 37 employees are participating in the Defense Leadership Development Program, and 7 employees have attended Executive Leadership courses over the last year. Many SPAWAR employees are also covered under the Defense Acquisition Workforce Improvement Act and they receive specialized training under that program that develops the skills and attributes required to effectively manage the Defense acquisition process.

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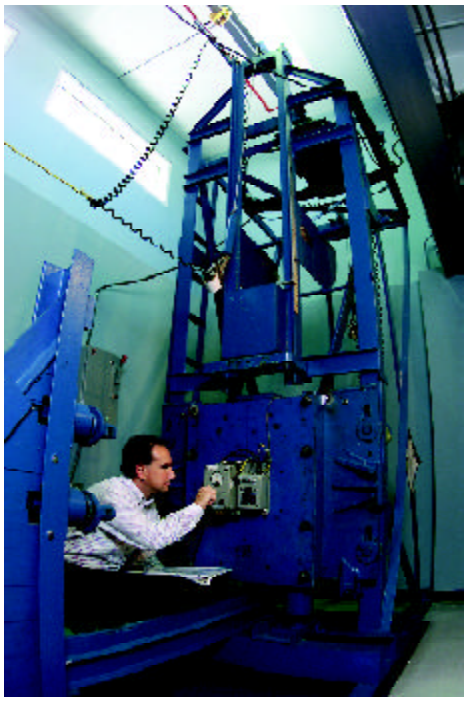


Capability for the Future

FORCEnet Vision

An architecture that integrates sensors, networks, decision aids, weapons, and supporting systems into a highly adaptive, human-centric, comprehensive maritime system that operates from the seabed to space and from sea to land. FORCEnet allows rapid accumulation and dissemination of knowledge, creating a shared, integrated battlespace picture that translates into executable courses of action.

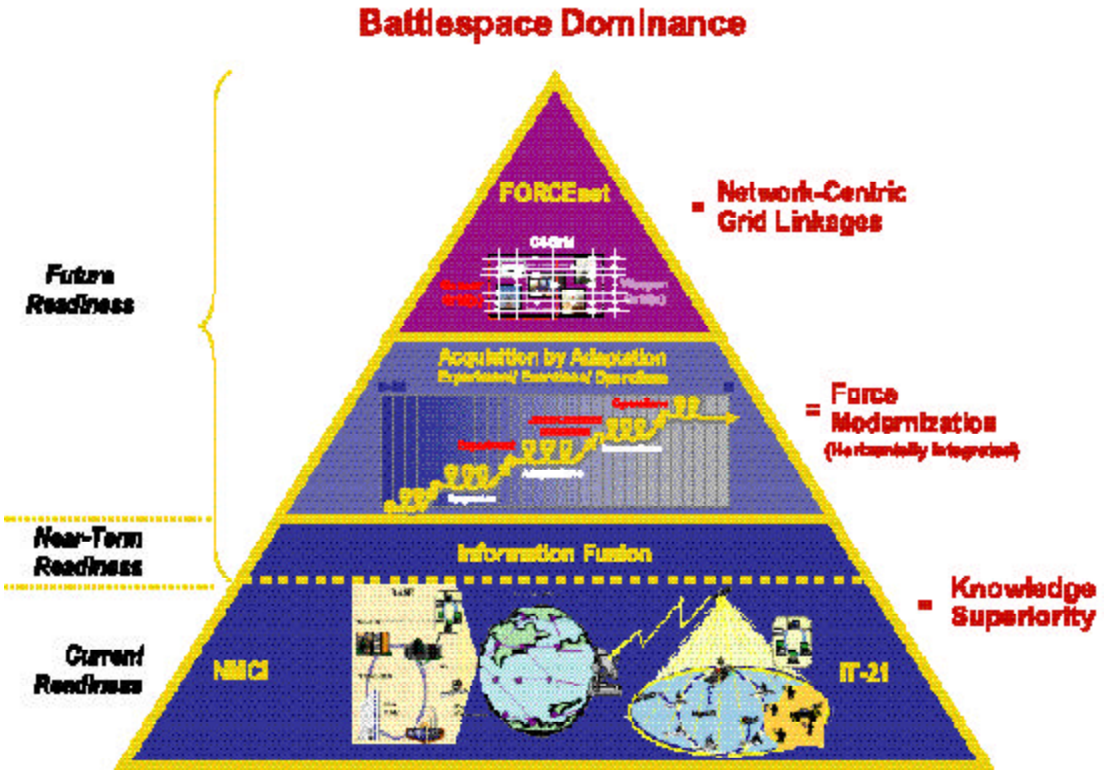
As SPAWAR helps prepare the Navy for readiness in the future, we are constantly improving our processes to make SPAWAR products more cost-effective and more responsive to customer needs, facilitating the delivery of increased capability to the warfighter in less time. Several major initiatives are now underway to realize improvements in future readiness within the area of force modernization and the road ahead to FORCEnet. One major initiative under way is the Naval Fires Network (NFN). NFN is an end-to-end capability, which allows sensor data and other intelligence information to be rapidly converted to precise coordinate information for use with Precision Guided Munitions (PGMs). NFN is the integration and fielding of both new and existing capabilities to support time critical targeting. The consolidated architecture for NFN integrates of elements of three existing systems: GCCS-M, TES-N, and JSIPS-N. By integrating the capabilities of these systems and fielding them at key nodes in the warfighting architecture, we will have the ability to reduce the cycle time necessary to target moveable targets with our PGMs. The integrated capability that NFN brings to the battlespace will form the basic architecture upon which FORCEnet is established.

FORCEnet/Expeditionary Command, Control, Communications, Computers and Combat Systems Grid (EC5G)

FORCEnet is the maturation of net centric warfare that will enable naval forces to transition to Fully Netted Maneuver Warfare. The ability to achieve a real-time, shared understanding of the battlespace at all levels through a global network providing rapid accumulation, manipulation, and dissemination of real-time information, and transforming it into knowledge via FORCEnet provides a powerful weapon to the naval force commander.

EC5G is an effort to lay the networking infrastructure for FORCEnet. The EC5G will move Battle Force Command and Control (BFC2) and its underlying ship-to-ship and ship-to-shore networks into the 21st century to support NCW and replace the current infrastructure, which is strained by a reliance on manpower-intensive, outdated systems. EC5G will be the underlying construct though which every element of the forward-deployed naval force will be linked and tied to a global interoperable network known as “Global Information Grid” (GIG).

Using a multi-year process, EC5G will bring together the acquisition, science and technology, and experimentation communities to identify and experiment with innovative information technology, select compelling successes and build the acquisition strategy for fielding initial operational capability in



FY06. SPAWAR is leading a multi-command effort to develop the EC5G Master Plan, which will align ongoing efforts in Fleet Battle Experiments and Future Naval Capabilities into the Horizontal Integration Process and future IT-21 Block Upgrades.

In FY 01, SPAWAR led a very early EC5G proof of concept in FBE India under two SPAWAR sub-initiatives entitled Advance Joint Communications and Jini Network Computing. These sub-initiatives explored the concept of providing automated communication services over the network as well as augmenting ship-to-ship communications via a high capacity (4 Mbps) beyond line-of-sight communications relay link.

Horizontal Integration of IT-21 Block Upgrade

The IT-21 Block 1 Upgrade reflects SPAWAR's strategy to deliver integrated, end-to-end capabilities to the Fleet. In FY 01, the Horizontal Integration process initiative contributed to development of an integrated approach for delivering end-to-end C4ISR capabilities for the naval warfighter. This first major upgrade for IT-21 will deliver improved capabilities in the following areas:

(1) Situation Awareness
(2) Collaborative Planning
(3) Force Sustainment
(4) Deliberate and Crisis Planning
(5) Time-Critical Strike

IT-21 Block 1 Upgrade is planned for initial installation and operational assessment in January 2003 onboard the *USS Coronado (AGF-11)* prior to installations in selected ships and shore sites. Since September 11, SPAWAR is accelerating installation of IT-21 Block 1 Upgrade capabilities in a series of "mini-blocks" in available Fleet units. This process will continue to reduce cost, decrease time for delivery of future IT-21 Block upgrades beyond Block 1, and speed insertion and transition of new technologies into SPAWAR's integrated C4ISR product lines.

Web-Enabled Navy

The world wide web and internet technology have transformed the computing world, making information of all types available to a multitude of users at any time without the need for specialized software or expensive client upgrades or installations. The accessibility of this environment to Fleet users as well as to developers has transformed the Navy tactical and non-tactical computing environment, resulting in several successful Fleet and SYSCOM-developed web applications.

The Vice Chief of Naval Operations established Task Force Web to implement the vision of a Web-Enabled Navy. Implementation consists of two efforts: (1) establishment of a the Navy Enterprise Portal, and; (2) Web-enable or "portal-enable" legacy applications. SPAWAR has been named the "Afloat Integrator" for the Navy Enterprise Portal. We are providing infrastructure, talent, and processes to promote interoperability and integration across the Navy enterprise. Together with all Echelon II commands, SPAWAR is also proceeding with web-enabling its own applications

Navy Marine Corps Intranet (NMCI)

The $6.9 billion NMCI contract, awarded in October 2000, marks the start of a new enterprise service-level agreement contractual approach to upgrade of our shore IT infrastructure. This new approach involves technical refresh of the network infrastructure ashore with increased capabilities, reduced cost, and greater information assurance for naval users. The innovative outsourcing program will provide secure, seamless, global end-to-end network connectivity throughout the Navy and Marine Corps, supporting both warfighting and business functions. Under an aggressive FY 01 schedule, Electronic Data Systems' Information Strike Force has taken over the "as is" environment and management of existing information technology networks, hardware, and software for over 40,000 seats. Also in FY 01, the Joint Information Strike Force/NMCI Program Management Office team has stood up two Network Operations Centers (NOC) and two Help Desk Centers. The information assurance team has conducted over 630 security test evolutions supporting NOCs and server farms while supporting the rationalization of legacy applications.

Convergence

The initial challenge in achieving the vision of FORCEnet is to integrate the various disparate networks and taxonomies into a single interoperable architecture. The emergence of NMCI has initiated this process. However, NMCI, the IT-21 Block series, the Marine Corps Tactical Network/Enterprise Network, and BLII OCONUS all have different architectures, different hardware and software requirements, separate management authorities, and independent identities. This creates inherent inefficiencies, higher ownership costs, and hampers interoperability. It reflects disparate approaches to technology refresh, a key to maintaining knowledge superiority in the future.

To address these issues, SPAWAR is pursuing a convergence strategy in terms of network design and development for the future. Using NMCI as an enabler/forcing function for convergence, SPAWAR is crafting an infrastructure strategy leverging points of commonality. The vision for the future is to support full convergence by providing seat management for BLII OCONUS, and a modified seat management approach for C4I networks afloat.

Ballistic Missile Defense

In FY 01, SPAWAR established a Missile Defense Mission Area Coordinator to coordinate SPAWAR activities and capabilities that support Ballistic Missile C4I (BMC4I). In FY01, SPAWAR developed a corporate BMC4I Roadmap to align SPAWAR capabilities with the Navy's overall missile defense efforts. SPAWAR also coordinated and hosted a series of presentations to the Navy and Secretariat staffs in support of Team TANGO. Team TANGO is the Navy's executive steering

group for missile defense and provides top-level guidance to ensure Navy missile defense efforts align with Navy and Joint warfighting objectives. Briefings provided to Team TANGO conveyed SPAWAR's understanding of BMC4I requirements and how the SPAWAR IT-21 product line supports those requirements.

Advanced Concept Technology Demonstrations (ACTDs)

The goal of the ACTD Program, a joint effort by the acquisition and operational communities within the DoD, is to provide an early and inexpensive assessment of military utility. Of significant interest is the $30M CINC-21 ACTD sponsored by Pacific Command and the Office of Naval Research. CINC-21 focuses on visualization and knowledge management technologies, i.e., putting the right information in front of the right decision-maker at the right time to enhance force effectiveness. It will improve the ability of all parties to collaborate, plan and decide appropriate courses of action in situations involving multiple, concurrent, theater operations and coalition activities.

SPAWAR leads development, implementation and assessment for this ACTD, and is responsible for the overall planning and execution of transitioning capabilities from CINC-21 to formal acquisition programs and initiatives, e.g. GCCS-M and NMCI. SPAWAR is also participating in the activities of the Joint Medical Operations-Telemedicine ACTD that started in FY 98 as well as the Homeland Security and Joint Task Force Warfighter Area Relay Network (WARNET) ACTDs that are just getting underway.

Space

SPAWAR continues to play a critical role in DoD's support for space-based and space support systems that are essential for warfighter strategic and tactical support. The United States and its Allies, as highlighted in the January 2001 Space Commission Report, depend significantly upon our ability to both operate from space and exploit space to enhance our intelligence, communications, surveillance, and war fighting capabilities. Space-based and space support systems transmit and collect data, video, and voice. They continue to play a central role in the collection and distribution of time critical information that enables U.S. forces to maintain a distinct advantage in the execution of any mission, anywhere on the globe, over our adversaries.

Over the next decade DoD and the Intelligence Community will replace virtually the entire inventory of satellites at a cost of over $60 billion. As these systems are replaced, SPAWAR will play a significant role in the design of the architectures, the development of the technologies, and the fielding and support of the SATCOM and surveillance systems that support tomorrow's warfighters.

Two key SPAWAR space programs the Naval Space Surveillance System (NSSS or "Space Fence") Program and the Advanced Narrowband System (ANS) SATCOM Program. The NSSS program will be updated to better support the expanding need for real-time satellite vulnerability information. A critical component in attaining future FORCEnet and GIG communications connectivity is ANS. This program is an end-to-end SATCOM system comprised of

MUOS satellites and ground satellite control and network control resources, and the related DoD Teleport and Joint Tactical Radio System compliant architecture user terminals, is expected to be initially fielded in 2007 to replace the aging UFO SATCOM constellation.

As today's current land, air, undersea, sea, and space warfighting forces are transformed into the 21st century's mobile, fluid, and more-lethal force, their reliance upon real-time Common Operational Picture, Time Critical Strike targeting, and intelligence information, world-wide, will continue to grow, placing an increased demand on SATCOM resources. These enhanced capability requirements will necessitate a seamless, interoperable, global communications grid that allows the transfer, exchange, allocation, and re-allocation of SATCOM assets on a real-time basis. The ANS, once fully fielded, will provide a cost-effective, advanced capability SATCOM system that will ensure and knowledge superiority to the mobile warfighting forces through improved capacity, enhanced frequency spectrum utilization, advanced waveform development, optimized diversity techniques, and dynamic allocation of communication resources.

Technology Roadmap – Mapping Vision to Mission Capabilities to SPAWAR Execution

SPAWAR's products are among the primary elements enabling the Navy's transition from platform-centric operations to Network Centric operations. Using a Consolidated Product/Technology Roadmap, SPAWAR is striving to continue to provide the latest C4ISR technologies to the Fleet and constantly improve warfighting effectiveness. The roadmap provides a comprehensive view of how SPAWAR programs/products, planned upgrades in functionality, potential technology solutions and Fleet experimentation opportunities align to the Mission Capability Packages. The Roadmap also supports program budgeting and planning by identifying future capability needs to fill functionality gaps/ shortfalls in IT-21 Block Upgrades, as well as future non-IT21 products. This early planning enables focused technology scouting and reduces the timeline for transitioning advanced technologies into increased warfighting capability.

Future Naval Capabilities (FNC) – Knowledge Superiority and Assurance (KSA)

The FNCs were established to improve the transition of Naval Science and Technology investments to formal acquisition programs and thus improve Warfighter capabilities. This past year SPAWAR worked with the Office of Naval Research to define the execution programs for the FNCs.

The Knowledge Superiority Assurance (KSA) FNC is of particular interest. It has two components that directly impact SPAWAR: information distribution and decision support systems. Information distribution focuses on developing and delivering technology to enable information superiority for naval forces in all operating environments. Its elements include the ability to achieve a responsive, integrated, over-the-horizon, wireless command, control, and communications infrastructure for Naval operations. Decision support systems focus on developing software programs, tools, and some hardware that support operational decisions. The intention of these systems is to facilitate the warfighter's ability to share information and establish a common situational awareness, respond to emergent threats and execute battlespace operations in a synchronized manner.

During FY 01, SPAWAR was an active participant in the KSA FNC Integrated Product Team and while defining the KSA projects for execution beginning in FY02. The projects have near-term impact (e.g. IT-21 Block 1: Intra-BG/ARG line-of-sight networking), mid-term impact (e.g. IT-21 Blocks 2 & 3, Cryptologic Management and Analysis Support System), and far-term impact (e.g. IT-21 Block 4: Extensible C4I Tactical Framework).

Experimentation, Demonstrations, and Operational Assessments

SPAWAR proactively engages in opportunities to explore new technologies and warfighting concepts through participation in Navy, Joint and Combined experiments and demonstrations. SPAWAR was the lead Navy site for the Joint Warrior Interoperability Demonstration (JWID) this past year. This is an international event involving over 1000 participants from 10 allied nations and NATO. SPAWAR, with its unique capabilities, completed six independent operational assessments during JWID 01.

SPAWAR also participated in FBE India mentioned earlier, providing infrastructure for the experiment (GCCS-M, GBS, etc.) as well as leading many sub-initiatives including Hostile Force Integrated Targeting System and Surveillance and Reconnaissance Management Tool. SPAWAR has developed a corporate strategic experimentation plan for FBE Juliet to gain maximum benefits and ensure results are fed back into the SPAWAR product line.

SPAWAR was the lead Navy site for the Joint Warrior Interoperability Demonstration (JWID) this past year.

— A —

ACTD	Advanced Concept Technology Demonstrations
ADNS	Automated Digital Network System
ADS	Advanced Distributed System
ANS	Advanced Narrowband System
Ao	Operational Availability
ATLASS	Asset Tracking Logistics and Supply System
ATM	Asynchronous Transfer Mode
ACTD	Advanced Concept Technology Demonstration
ARG	Amphibious Readiness Group

— B —

BFC2	Battle Force Command and Control
BG	Battle Group
BGSIT	Battle Group System Integration Testing
BLII	Base Level Information Infrastructure
BMC4I	Ballistic Missile C4I

— C —

C2	Command and Control
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CASREP	Casualty Report
CASCOR	Casualty Correction and Reconnaissance
CFFC	Commander, Fleet Forces Command
CINC	Commander-in-Chief
CIPO	CINC Interoperability Program Office
CNO	Chief of Naval Operations
COBLU	Cooperative OUTBOARD Logistics Upgrade
COP	Common Operational Picture
CST	COP Synch Tools
CUB	Cryptologic Unified Build
CVBG	Carrier Battlegroup
CWSP	Commercial Wideband Satellite Communications Program

— D —

D-30	Deployment minus 30 months
DASN	Deputy Assistant Secretary of the Navy
DDG	Guided Missile Destroyer
DF	Direction Finding
DoD	Department of Defense
DMR	Digital Modular Radio
DMS	Defense Messaging System
DSCS	Defense Satellite Communications System

— E —

EC5G	Expeditionary Command, Control, Communications, Computers and Combat Systems Grid
ECS	External Communications System
EHF	Extremely High Frequency
ESC	Electronics Systems Command

— F —

FDNF	Forward Deployed Naval Forces
FMS	Foreign Military Sales
FNC	Future Naval Capabilities
FPS	Force Protection Surveillance System
FSET	Fleet Systems Engineering Team
FST	Fleet Support Team

— G —

GBS	Global Broadcast System
GCCS-M	Global Command and Control System-Maritime
GCSS	Global Combat Support System
GIG	Global Information Grid
GIGe	Gigabit Ethernet
GMTI	Ground Moving Target Indicator
GPS	Global Positioning System

—H—

HI	Horizontal Integration
HLS	Homeland Security

— I —

IA	Information Assurance
IBFT	Integrated Battle Force Training
IDTC	Inter-Deployment Training Cycle
ILS	Integrated Logistics Support
INMARSAT	International Maritime Satellite
IO	Information Operations
IP	Internet Protocol
ISEA	In-Service Engineering Agent
ISNS	Integrated Shipboard Network System
ISR	Intelligence, Surveillance and Reconnaissance
IT	Information Technology
IT-21	Information Technology for the 21st Century
IUSS	Integrated Undersea Surveillance System
IW	Information Warfare

— J —

JC212G	Joint Command and Control Integration and Interoperability Group
JCC (X)	Joint Command and Control Ship
JFPO	Joint Forces Program Office
JSORTS	Joint Status of Operational Readiness and Training
JSTARS	Joint Surveillance Target Attack Radar System
JTIDS	Joint Tactical Information Distribution System
JWICS	Joint Worldwide Intelligence Communications System
JWID	Joint Warrior Interoperability Demonstration

— K —

KSA	Knowledge Superiority and Assurance

— L —

LAN	Local Area Network
LDR	Low Data Rate

— M —

Mbps	Megabits Per Second
MCS-21	Maritime Cryptologic System for the 21st Century
MDR	Medium Data Rate
METOC	Meteorological and Oceanographic
MEU	Marine Expeditionary Unit
MIDB	Modernized Integrated Database
MIDS	Multi-functional Information Distribution System
MIUW-SU	Mobile Inshore Undersea Warfare-System Upgrade
MLDN	Maritime Logistics Data Network
MTC	Multi-TADIL Capability
MUOS	Mobile User Objective System

— N —

NALCOMIS	Naval Aviation Logistics Command Management Information System
NAVAIR	Naval Air Systems Command
NAVSEA	Naval Sea Systems Command
NCW	Network Centric Warfare
NETWARCOM	Naval Network Warfare Command
NIPRNET	Non-classified Internet Protocol Routing Network
NITES	Navy Integrated Tactical Environmental System
NJI	Naval JSTARS Interface
NMCI	Navy Marine Corps Intranet
NOC	Network Operations Center
NSSS	Navy Space Surveillance System
NTCSS	Navy Tactical Command Support System

— O —

OCONUS	Outside Continental United States
OMA	Organizational Maintenance Activity
OOMA	Optimized Organizational Maintenance Activity
OPN	Other Procurement Navy
OPNAV	Office of the Chief of Naval Operations
OPNAV N6	Office of the Chief of Naval Operation, Space, Information Warfare, Command and Control Directorate
ORD	Operational Requirements Document
OTH-T	Over-the-Horizon Targeting

— P —

PKI	Public Key Infrastructure
PGM	Precision Guided Munition

— Q —

QOS	Quality of Service

— R —

RF	Radio Frequency

— S —

SAMS	SNAP Automated Medical System
SATCOM	Satellite Communications
SCI	Sensitive Compartmented Information
SHF	Super High Frequency (3-30 GHz)

SIPRNET	Secret Internet Protocol Router Network
SNAP	Shipboard Non-tactical ADP Program
SPAWAR	Space and Naval Warfare Systems Command
SSC	SPAWAR Systems Center
SSEE	Ship's Signals Exploitation Equipment
SubHDR	Submarine High Data Rate
SURTASS	Surveillance Towed Array Sensor System
SYSCOM	Systems Command

— T —

TADIL	Tactical Data Information Link
TBMCS	Theater Battle Management Core System
TIDS	Tactical Information Dissemination System
TMIP-J	Theater Medical Information Program-Joint
TV-DTS	Television Direct to Sailor

— U —

UAV	Unmanned Aerial Vehicle
UHF	Ultra High Frequency
UFO	UHF Follow On
USPACOM	U.S. Pacific Command

— V —

VIPER	Validated Integrated Physics-Based Electromagnetic Radiation

— W —

WARNET	Warfighter Area Relay Network

— X, Y, Z —